THE

AMERICAN GAS-LIGHT JOURNAL

THE OFFICIAL GAZETTE OF

LIGHT, HEAT, WATER-SUPPLY, AND SEWERAGE.

Iron Buildings, Nos. 254 & 256 Canal Street, East, near Broadway, New York.

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CORNELIUS & BAKER,

MANUFACTURERS OF

Lamps, Chandeliers, Gas-Fixtures, &c.,

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AND EVERY DESCRIPTION OF GAS-FIXTURES.

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In addition to their large stock of

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Of every description, and of the newest styles,

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Solar, Camphene & Fluid Lamps, Girandoles, Hall-Lanterns, &c.

No. 74 Beekman street, NEW YORK.

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And 88, 90, 92, 94, 96, 98 and 100 Johnston-st., BROOKLYN, N. Y.

E. V. HAUGHWOUT & CO.

488, 490, & 492 BROADWAY,

Cor. of Broome-St., New York,

Gas-Fitters & Contractors for the Erection of Gas-Works.

MESSRS. E. V. HAUGHWOUT & Co. have on hand a most extensive assortment of the newest and most desirable styles of

CHANDELIERS, BRACKETS, LAMP-POSTS, AND GAS FIXTURES OF EVERY DESCRIPTION,

to which they would respectfully call the attention of the public.

☞ Gas-fitting done in the most workmanlike manner, and on reasonable terms.

C. A. VAN KIRK & CO.,

MANUFACTURERS OF

GAS-FIXTURES AND CHANDELIERS,

Ambrose's Patent Coal-Oil Burners, to be used without Chimnies,

Patent Paragon Coal-Oil Burners, Patent Improved Excelsior

Coal-Oil Burners, Hand Lamps, Columns, &c.

Manufactory at Frankford, Philadelphia.

SALES-ROOM, 636 CHESTNUT STREET.

☞ Every Article warranted equal in design and workmanship to any manufactured in the country.

M. L. CURTIS,

141 ELM STREET, NEW YORK CITY.

MANUFACTURER OF

GAS-FIXTURES.

Gas-Fitting in all its Branches.

OLD CHANDELIERS, &c., RE-FINISHED IN GILT, OR BRONZED

OR MADE TO APPEAR EQUAL TO NEW.

ANALYTICAL CHEMISTS.

C. ELTON BUCK, Analytical and Consulting Chemist, 254 Canal-st., New-York. Analyses of Ores, Minerals, Soils, Guanos, Coals, &c., and Tests of Commercial Articles, carefully and promptly made. Consultations may be had, and opinions given on Chemical questions. Samples for analysis from a distance, may be sent by mail or express, directed to the Laboratory as above.

LABORATORY OF CHEMISTRY, —Consultations on Chemistry applied to arts and manufactures, agriculture, metallurgy, analysis of ores, mineral waters, soils, &c. Advices on chemical fabrications. Address, Professor H. DUSSAUCE, Chemist, (from the Conservatoire Imperial of Arts and Manufactures, Paris) New Lebanon, N. Y.

ANALYTICAL & Manufacturing Chemistry.—Gesner's Chemical and Engineering Rooms, 24 William-street, New York. Rooms No. 28 and 29. Analysis made of all mineral and commercial articles Coal oils tested, coal oil works erected, and contracts made. The best processes for purifying and deodorizing; coal and petroleum oils furnished, with skilful workmen and superintendents. Mines surveyed and coals tested. The Kerosene patents, from which the coal oil business in the United States originated, were granted to Dr. Gesner, Chemist and Geologist.

GAS & WATER FITTINGS.

LANE & ANNIN, GAS, WATER and STEAM FITTINGS,

88 JOHN-St., Cor. of GOLD,

NEW-YORK.

Manufacturers of the best quality of all the varieties of Connections for Iron Pipes; both Malleable, Wrought and Cast Iron. Also Meter Cocks, Lamp Cocks, &c.

Also, sole manufacturers of a New Meter Cock, which connects with Lead Pipe, forming a perfect joint without solder, Also, a connection for Lead pipe, without the use of solder.

GALVANIZED FITTINGS FOR PLUMBERS.

Wrought Iron Pipe of best quality, for sale Orders solicited.

CONTRACTS MADE FOR HEATING BUILDINGS BY STEAM.

PATENT AGENTS.

TO INVENTORS.—Patent Agency of the AMERICAN GAS-LIGHT JOURNAL.—The Proprietor of the AMERICAN GAS-LIGHT JOURNAL, is happy to announce that a

PATENT DEPARTMENT

Is now connected with these ROOMS, under the charge of

MR. F. C. TREADWELL, JR.,

Well known as one of the most prompt, reliable and able Patent Agents and Experts in the United States.

Patents taken out in this Country, and in GREAT BRITAIN, FRANCE, BELGIUM, and All other Countries where Patent Laws are in force.

Re-Issues, Rejected Applications, Interference Cases, attended to with the utmost personal care, and with Mr. TREADWELL'S long experience, the interests of Patentees will be unsually secure.

Inventors are cordially invited to visit the ROOMS of the AMERICAN GAS-LIGHT JOURNAL, Iron Buildings, Nos. 254 and 256 Canal street, East, near Broadway, New York

MESSRS. J. WRIGHT & CO., CONSULTING ENGINEERS and SOLICITORS of PATENTS, No. 42 Bridge street, Blackfriars, London, E. C. Patents for inventions obtained in all countries where Patent Laws are in force.

CLAY RETORTS.

NEW YORK FIRE-BRICK Manufactory. (Branch Works at Kreischerville, Staten Island)

B. KREISCHER & CO, office 56 Goerck street, corner Delancy street, New York.

GAS-HOUSE TILES and FIRE BRICK of all shapes and sizes. FIRE MORTAR, CLAY, and SAND articles of every description made to order at the shortest notice. B. KREISCHER, M MAURER. A WEBER

KENNEDY'S Method of Securing Iron Mouth Pieces to Clay Retorts—The Retort is made in the usual form, but without any bolt-holes through the flange. An iron collar in two pieces, is placed around the Retort behind the flange, and bolted to the mouth piece outside of the flange instead of through it.

For Engravings, see AMERICAN GAS-LIGHT JOURNAL for June, 1860, page 245. Address the Patentee, JOHN P. KENNEDY, Trenton, N. J.

SCIENTIFIC BOOKS.

SCIENTIFIC BOOKS.—D. APPLETON & Co., 443 and 445 Broadway, have just published a Catalogue of their large assortment of Books (English and American) in every department of Science and Art, embracing a valuable collection of works on Geology, Chemistry, Mechanics, Engineering, the Naval and Military Sciences, and on Steam, Steam Engines, and Steam Navigation, etc., etc., etc., with the dates and prices of each work affixed.

Catalogues remitted to any address on receipt of six cents in P. O. stamps.

GAS ENGINEERS' LIBRARY—A few works, indispensable to Engineers, Contractors and others engaged in the construction of Gas Works and manufacture of Gas, have been selected out of a large stock of chemical and other works, and are recommended to the attention of those interested. See page 208, vol. 11, of this JOURNAL.

For sale at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, New-York.

COAL OIL.—A Practical treatise on Coal, Petroleum, and other distilled Oils, by Abraham Gesner. 8vo., illustrated. Cloth, $1 50.

Sent free by mail on receipt of the amount.

BAILLIERE BROTHERS,
440 Broadway, New York.

BAILLIERE BROTHERS keep always on hand a complete assortment of all new books on Chemistry and the Sciences.

Catalogues sent gratis on application.

WATER-GAS WORKS.

WATER-GAS.—APPLETON & GRAHAM,

AGENTS FOR THE

NEW ENGLAND WATER-GAS COMPANY,

UNDER THE SANDERS PATENT,

Are prepared to give estimates for Works, and guarantee the cost of Gas not to exceed One Dollar per 1000 cubic feet.

☞ Coal or Rosin Gas-Works altered at small expense.

A. & G. continue as heretofore to erect their improved Rosin and Rosin-Oil Works for Private Dwellings, Factories, &c. For further particulars apply at 56 WASHINGTON-ST., BOSTON.

MISCELLANEOUS.

Co-partnership Notice.—The Co-partnership heretofore existing between Joseph Nason and John C. Dodge, under the firm of Nason & Dodge, has been dissolved by mutual consent. The affairs of the firm will be settled and the name of the firm used in liquidation by either of the partners, at No. 61 Beekman street.

New York, 1st January, 1861.

The undersigned have formed a co-partnership under the style of JOSEPH NASON & CO., for the purpose of continuing the business heretofore carried on by Nason & Dodge, at No. 61 Beekman street.

The enlargement of their works, the addition of new machinery, and increased facilities in every department, will enable them to maintain the reputation of the late firm in the quality and style of their goods, and to offer liberal terms to their customers.

The construction of Steam Heating Apparatus, and its application to the warming and ventilation of buildings, and to every art, trade, and process within the range of steam heating, will receive, as heretofore, special attention.

JOSEPH NASON.
HENRY R. WORTHINGTON.

New York, 1st January, 1861.

BURTIS' PATENT COMPENSATING COUNTERBALANCE FOR GASOMETERS.—This Improvement consists in making the attachment to the Gas-Holder by counterweights in such a manner as to effectually prevent it from getting out of level so as to bind, and also to prevent any escape of Gas at Cup or Hydraulic seal, where the Holder is on the Telescopic plan. Holders that work out of level, are thus evenly balanced, and prevented from binding or lodging against Tank-wall and falling down, thereby being rendered unfit for service. Where Holders or sections of Holders cannot be used on account of the above difficulties, this arrangement will remove them, and place the Holder in good working order; moreover, with this attachment, deep tanks are not necessary

BURTIS' COUNTERBALANCE has been in use for three years at the Gas-Works, Chicago, Ill. Its resistance to high winds and snow-drifts, is alone sufficient to recommend its general adoption For Engravings, see AMERICAN GAS-LIGHT JOURNAL for June, 1860, page 221. Address

P. T. BURTIS,
Engineer Gas-Works, Chicago, Ill.

COAL-OIL & CANDLES.

CANDLES FROM COAL.—Manufactured by the New York Paraffine Candle Co. Under Meucci's Patent. The above Company having recently made great improvement in their mode of manufacture, now offer to the public a Candle superior to any other in the market. They give a softer and more brilliant light and burn 6 hours to the pound longer than the best wax and sperm, and considering the strength of the light, are the most economical Candles in use.

CAUTION.

As unscrupulous persons are already offering imitations of these Candles, purchasers should bear in mind, that every box sold by this Company is stamped with the annexed trade mark, to counterfeit which is felony.

For sale by all first-class grocers, and to the trade by WM. E. RIDER,
General Agent of the Company,
16 Beekman Street, New York.

STANDARD Photometric Candles.—Owing to a number of Applications made to me for information concerning the supply of the "Standard Sperm Candles," used in Photometries, I have obtained a supply, from which I can furnish those who require them with full directions for use. T. W. PARMELE,
No. 4 Irving Place, New York.

TO CANDLE AND SOAP Makers.—Processes with drawings to manufacture every kind of candles and soaps by different processes: Candles by distillation, saponification, French candles, common candles, hard and soft soaps, palm soaps; processes to bleach palm oil and make candles out of it; purification of tallow; essays on greases and soaps. Address, Professor H. DUSSAUCE, Chemist, New Lebanon, N. Y.

J. L. McREA, Dealer in Coal Oils and Lamps, Binnacle and Signal Light Oils, 139 Water street, New York.

Rosin Oil and Rosin.—For sale of our own manufacture a superior article of ROSIN OIL, for Gas purposes. Also Refined Oil. For shipment in secure iron-bound barrels, or by any single barrel.
Address MARYLAND GAS COMPANY, No. 6 Bank of Baltimore Building, Baltimore, Md.
P. S. This Company is also prepared to construct their superior Patented GAS WORKS of any capacity, from that required for a private dwelling, hotel, church, college or factory, to such as will supply cities and towns, complete in all their parts for the manufacture of GAS, from either Rosin Oil, Coal, or Rosin.

THE LUTHER ATWOOD OIL CO.—Manufacturers of Superior Illuminating, Machinery and Binacle Oils. Office, No. 34 Burling Slip, New York.

EMPIRE CITY CAMPHENE Works.—Aaron Seeley, Manufacturer and Distiller of camphene, alcohol, burning fluid, coal-oil, and dealer in naval stores, of every description. 32 and 34 Burling Slip, New York.

H. RYDER & CO., New Bedford, Mass.—Purchasers and Manufacturers of Semi-Crude Paraffine. Ryder's patent Paraffine Candles, manufactured and for sale.

NEW-BEDFORD OIL CO.—Office foot of South-st., New-Bedford, manufacture coal-oil for illuminating and lubricating purposes, of the best quality.
ABRAHAM H. HOWLAND.
Our Coal Oil will burn in all Kerosene Lamps.

LUBRICATING COAL OIL. Crude Oil, and Paraffine.—Calvin Dickey, Manufacturer of Lubricating Coal Oil, free from odor and chemicals, and warranted to be as good for cotton and woolen machinery as lard oil. This oil is now also used by several rail roads in its pure state. Samples sent to responsible parties. Also 32° crude oil, which will yield 75 per cent. of burning oil; and slack pressed Paraffine of superior quality. CALVIN DICKEY,
Newark, Ohio.

OLEOMETERS.

OLEOMETER, OR HYDROMETER. For Kerosene, Coal Oils, Petroleum and other Distilled Oils. Scale by Dr. Gesner. Manufactured and sold by
G. TAGLIABUE,
298 Pearl-st., New York.

PORTABLE GAS-WORKS.

THE AUBIN GAS-WORKS CO., No. 44 State street, Albany, N. Y., will refer parties wanting GAS-WORKS FOR VILLAGES to seventeen of their Village Works now in operation in the United States and the Canadas in *every one of which the profits of the company are ten per cent. and upwards, and yet good gas is furnished.* Agents wanted to extend the sale of the AUBIN PORTABLE GAS STOVE for dwellings, factories, &c., which will make 1000 feet of gas in five hours, and with greater simplicity, safety and economy, than any other known apparatus.

BUTLER'S PATENT PORTABLE ROSIN GAS-WORKS,
FOR
DWELLINGS, CHURCHES, COUNTRY VILLAGES
AS WELL AS FOR CONSUMERS IN LARGE CITIES.
JOHN BUTLER,
No. 112 Fulton-st. and 15 Henry-st.,
Brooklyn, N. Y.

FOR LIGHTING RAILROAD CARS AND STEAMBOATS WITH GAS.
The whole process of Filling the Gas-Holders of a Railway Train, requires but Three Minutes.
APPLY TO THE
NEW YORK CAR & STEAMBOAT GAS CO.,
No. 117 Fulton-st., N. Y.

C. R. WOODWORTH, Manufacturer of
PORTABLE GAS-WORKS,
74 WALL STREET, New York City.

PORTABLE GAS WORKS.—S. T. McDOUGALL'S PATENT Portable Gas Works, for making Gas from Rosin, Rosin Oil, Coal Oil, Naptha, Grease, etc. These Works combine the latest improvements in gas making, and are guaranteed to be superior to any in market. They are made of all sizes, suitable for either country or city use. No county house is complete without its Gas Works. Gas Stoves of every description on hand and made to order. For sale by S. T. McDougall, 170 Center Street, New York.
Agents wanted in other cities to sell rights or machines.

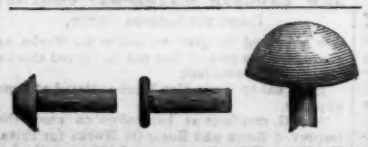
GAS FOR THE COUNTRY.—C. WOOSTER, Manufacturer of Improved Portable Gas-Machines, for Villages, Public Institutions, Churches, Hotels, Railroad Depots, Factories, Mills, Machine-Shops, Plantation Dwellings, &c. Office, 256 Canal street, near Broadway.
This Machine has been in successful operation for years, in many of the best residences and factories in the country, and for simplicity of construction, ease of management and economy of light produced, possess advantages over all other machines for the purpose now in use. It is adapted to the making of Gas from Crude Rosin or Rosin-Oil, producing a Gas of twice the illuminating power of Coal-Gas, at about one half the price usually charged for that gas.
Every Machine is sold under a strict guarantee to operate according to representation, and no payment required until the fact is demonstrated by actual use.
For further particulars, and descriptive pamphlet containing references to numerous parties now using the apparatus, address
C. WOOSTER,
No. 256 Canal-st., near Broadway, N. Y.
For Engravings, see AMERICAN GAS-LIGHT JOURNAL, for June, 1860, page 245.
☞ Responsible Agents wanted, with whom liberal arrangements will be made.

APPLETON'S IMPROVED GAS-Works, for Factories, Hotels, Dwellings, and Towns. The most simple and economical works in use, furnishing a superior light to coal gas at a cost of one half a cent per burner per hour. It does not injure trees, or plate, and is not affected by cold. For Circular and Terms apply to APPLETON & GRAHAM,
56 Washington street, Boston.
For Engravings, see AMERICAN GAS-LIGHT JOURNAL for April, 1860, page 213.

ROSIN GAS-WORKS, for Factories, Hotels, and Public Buildings. These works may be seen in operation at the Berkshire Woolen Mills, Great Barrington, Mass.; Manchester Mills, Manchester, Ct.; A. A. Van Alen & Co's. Factories, Stuyvesant Falls, N.Y., and many other places JAMES O. MORSE & CO.,
76 John-st., New York.

MARSH'S PATENT ROSIN or Sun-Light Gas-Works, for Private Dwellings, Hotels, Factories, Railway stations, Sugar-Houses, Towns, &c. By the peculiar construction of the Retorts, the largest amount of decomposing surface is obtained in the smallest space. 2d. Gas is manufactured from crude rosin, without the least deposit of carbonaceous matter in the retorts or pipes: thus enabling them to be operated continuously, generating rapidly the best and cheapest illuminating gas obtained from this material. ALFRED MARSH & CO.,
241 Broadway, New York.

GASOMETER RIVETS.



PHILLIPS & ALLEN, Pennsylvania avenue, above 22d street, Philadelphia.—GASOMETER RIVETS of all kinds.

FINANCIAL.

GAS-LIGHT STOCKS FOR SALE. THREE HUNDRED THOUSAND DOLLARS of Stocks in various Gas-light Companies in the United States, paying from 6 to 12 per cent. dividend, for sale by JOHN B. MURRAY, Rooms of the AMERICAN GAS-LIGHT JOURNAL, N. Y.

OFFICE OF THE METROPOLITAN GAS-LIGHT CO.,
New York, Jan. 22, 1861.

AT THE ANNUAL ELECTION for Directors of this Company, held on the 14th inst., the following gentlemen were elected:

C. H. Sand,	Joseph Noble,
John D. Scott,	C. Godfrey Gunther,
Herman Marcuse,	George Opdyke,
James Hoy,	Melvin S. Whitney,
Edward Schell,	W. J. Syms,
Eugene S. Ballin,	Daniel Devlin.

At a subsequent meeting of the Board, C. H. SAND was unanimously re-elected President, JAMES HOY, Vice-President, O. ZOLLIKOFFER, Secretary and Treasurer, and W. TITUS, Assistant Secretary.
O. ZOLLIKOFFER, Secretary.

THE MANHATTAN GAS-LIGHT Company have declared a Dividend of Five per Cent., payable on demand.
S. H. HOWARD, Secretary.
New York, Jan. 23, 1861.

OFFICE WILLIAMSBURGH GAS-LIGHT CO.,
Brooklyn, Jan., 14, 1861.

THE BOARD OF DIRECTORS have this day declared a Dividend of Five per Cent upon the Capital Stock; also an Interest Dividend to date, on Scrip, payable on demand. C. F BLODGET, Secretary.

OFFICE OF THE NEW YORK GAS LIGHT CO.
Jan. 21, 1861.

AT AN ELECTION HELD AT this office on the 14th inst., the following named gentlemen were chosen Directors of this Company for the ensuing year:

William W. Fox,	Joseph Sampson,
Joseph Kernochan,	Lindley M. Hoffman,
Joseph Walker,	William A. Hadden,
Thomas W. Pearsall,	William C. Pickersgill,
Guy Richards,	John H. Adam.
Edward J. Woolsey	James R. Taylor,

and Cornelius L. Everitt.
At a subsequent meeting of the Board, WILLIAM W. FOX was unanimously re-elected President; JOHN MOWTON, Manager.
C. L. EVERITT, Secretary.

OFFICE OF THE MANHATTAN GAS-LIGHT CO.,
NEW YORK, Jan. 26, 1861.

AT THE ANNUAL ELECTION for Directors, held on 14th inst., the following gentlemen were elected for the ensuing year:

HENRY YOUNG,	MOSES TAYLOR,
JOHN R. LUDLOW,	URIAH J. SMITH,
WILLIAM H. SMITH,	CHARLES ROOME,
FLOYD SMITH,	JOHN J. PHELPS,
JOHN J. CISCO,	HENRY A. HURLBUT,
JOHN ALSTYNE,	BENJAMIN W. BONNEY,
WILLIAM V. BRADY,	JOHN A. ROBINSON,
	BENJAMIN B. SHERMAN.

At a subsequent meeting of the Board, CHARLES ROOME was unanimously re-elected President, FLOYD SMITH Vice-President, and S. H. HOWARD Secretary.
S. H. HOWARD, Secretary.

GAS-ENGINEERS.

C. N. TRUMP, Gas-Works Engineer, No. 56, North Seventh-street, Phila. Agent for the Aubin Gas-Works.
Gas-Works erected for Towns, Villages, Factories, and Dwellings.

JAMES RENWICK SMEDBERG, Consulting and Constructing GAS-ENGINEER. SAVANNAH, Geo.
REFERENCES:
CHARLES ROOME, Esq., Pres. Man. Gas Co., N. Y.
J. K. BRICK, Esq., Eng'r. Brooklyn Gas Co., "
Messrs. ELLIMAN BROTHERS, New-York.
F. T. WILLIS, Esq., Pres. Savannah Gas Co.
J. A. SABBATON, Esq., Eng'r. Man. Gas Co., N. Y.
JOHN B. MURRAY, Prop. AM. GAS-LIGHT. JOUR.

SCAMMON'S GAS-APPARATUS for private residences, factories, hotels and cities. See engravings of Rosin and Coal Gas-Works in AMERICAN GAS-LIGHT JOURNAL for Dec. 1, 1860, pages 179 and 180.
STEPHEN SCAMMON,
GAS-ENGINEER AND CONTRACTOR,
561 Broadway, New York.

STOP-COCKS, &C.

DANIEL THOMPSON, Machinist and manufacturer of Stop Cocks, Fire Plugs, &c., for Water-Works, STOP COCKS, VALVES, DRIP PUMPS, &c., for Gas-Works, No. 133, Elfreth Alley, Philadelphia.

WATER-METERS.

H. R. WORTHINGTON'S Patent Water-Meter.—This Meter combines accuracy, simplicity and remarkable durability, with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.
HENRY R. WORTHINGTON, 28 Broadway, N. Y.

GASOMETERS.

GASOMETERS, RETORT-HOUSE ROOFS, WATER-TANKS,
PURIFYING-BOXES, COAL-CARS, COKE BARROWS,
AND ALL KINDS OF
WROUGHT-IRON WORK FOR GAS AND WATER WORKS.
Manufactured by GEORGE W. KRAFT, Chestnut street wharf, West Philadelphia, Pa.

GEORGE STACEY, Cincinnati, O., Manufacturer of single and Telescopic Gasholders, Wrought-Iron Bridges, Girders, Joists and Stairways, Coke and Coal Wagons, Rakes, Screens, and other Gas-works tools, Slide and Cup Valves, Bolts, Nuts, Chisels, Ladles and other tools, Wrought-iron roofs, for Slate and Corrugated Iron, Gas Purifiers, Washers, Centre seal Valves and other Gas apparatus, Boiler-plate Retort Lids. Refer to—
Cincinnati Gas Light & Coke Co.
Nashville Gas-Light Co.
Springfield Gas-Light Co.
Columbus Gas-Light Co.
Cleveland Gas-Light Co.
Covington and Newport Gas Light Co.
Memphis Gas-Light Co.
Indianapolis Gas-Light and Coke Co.
James H. Caldwell, Esq., New Orleans.
John Jeffrey, Esq., Cincinnati.

POOLE & HUNT, Baltimore, Md., are prepared to execute orders for
GAS-HOLDERS,
IRON-ROOF FRAMING,
And all other Descriptions of
Iron Work for Gas-Works, Water-Pipes and Heavy Castings and Machinery Generally.

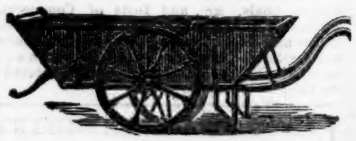
ANTI-FREEZING APPARATUS

FREEZING OF GAS-PIPES.—Walton's Patent Anti-Freezing Apparatus illustrated by engravings, in the AMERICAN GAS-LIGHT JOURNAL, of Jan. 1, 1861, page 212, is the most simple, durable and efficient of any known process.
See also certificates from Cincinnati, O., and Louisville, Ky. Gas-Works in same number, page 208. Address, JOHN WALTON.
Supt. Gas-Works, Louisville, Ky.

MISCELLANEOUS.

PHOTOMETER APPARATUS and Room for Sale.—The Room is about 6 feet wide by 12 feet long, painted black inside and screwed together. It can be taken down and boxed for transportation. All the pipes and fittings are complete for immediate use. Address PHOTOMETER, care of the AMERICAN GAS-LIGHT JOURNAL, 254 Canal Street, New York.

McKINNY & KELLY,
MANUFACTURERS OF
COAL-SCOOPS & COKE-BARROWS.



FURMAN-St., Near Fulton Ferry, Brooklyn, N. Y.

WOODEN TRAYS FOR GAS-PURIFIERS.—JOHN L. CHEESMAN, No. 147 Avenue C, near Tenth street, New-York, manufactures his Patent WOODEN TRAYS for GAS-PURIFIERS, *cut out of the solid wood*, superior to the ordinary iron plates, cheaper and more durable. The attention of Gas Companies and Engineers is called to this improvement, which has been adopted by the following Gas-Works:

Albany, N. Y.,	Manhattan, N. Y. City,
Chicago, Ill.,	Philadelphia, Penn.,
Williamsb'gh, N.Y.,	Worcester, Mass.

See Engravings on page 148, Vol. II.

OFFICIAL.—NOTICE TO MARINERS.—No. 104. Africa—Southeast Coast—Fixed White Light at mouth of Buffalo River.
TREASURY DEPARTMENT, Office of Light-House Board, Washington, Dec. 20, 1860.
Official information has been received at this Office that the Colonial Government at the Cape of Good Hope has given notice, that on and after the 25th day of August, 1860, a light would be exhibited from the light-house recently erected at the entrance of Buffalo River, East London, Southeast coast of Southern Africa.
The light is a *fixed white* light, elevated 45 feet above the level of high water, and visible in clear weather from a distance of about 11 miles.
The light-house—painted in alternate bands of red and white—stands on the reef at the south side of the entrance of the river.
R. SEMMES, Secretary.

GAS THERMOMETERS FOR ascertaining and regulating the temperature of the gas while passing through the purifiers into the station meters. For sale at the Rooms of the AMERICAN GAS-LIGHT JOURNAL.

WHERE GAS-WORKS AND WATER-WORKS ARE WANTED.

We are now publishing regularly the names of the thirty thousand post-towns in the United States, so that builders of gas-works and water-works, and the various manufacturers may see where are new openings for business. And as each post master will receive several copies of the AMERICAN GAS-LIGHT JOURNAL, for distribution, the number thus circulated will probably exceed *Three Million Copies. What a chance for advertisers!*

POST-OFFICE TOWNS IN THE UNITED STATES.

ARRANGED BY STATES AND COUNTIES,

Shewing where Gas-Works and Water-Works are Wanted.

ILLINOIS.

100 Counties, 1,482 Towns, 13 Gas-Works, 1 Water-Works.

Adams County.

Adams, Beverly, Big Neck, Burton, Camp Point, Clayton, Coatsburgh, Columbus, Elm Grove, Fair Weather, Fowler's Station, Houston, Keene, Liberty, Lima, Marcelline, Mendon, New Paloma, Payson, Pitman, *Quincy*, (c. h.,) Richfield, Stone's Prairie Ulm, Ursa, Woodville.

Alexander County.

Alexandria, Cairo, Clear Creek Landing, Dogtooth, Santa Fe Thebes, Unity.

Bond County.

Beaver Creek, Cottonwood Grove, Elm Point, *Greenville*, (c.h.,) Mulberry Grove, Old Ripley, Pocahontas,

Boone County.

Beaverton, Belvidere, Bonus, Boone, Burton's Corners, Caledonia Station, Garden Prairie, Kossuth, Leesville, Park's Corners, Poplar Grove.

Brown County.

Buck Horn, Cooperstown, Mount Sterling, Ripley, Versailles, Walker's Neck.

Bureau County.

Arlington, Buda, Bureau Junction, Dover, Knox, Hollowayville, Lamoille, Limerick, Macon Malden, Milo, Mineral, Neponset, New Bedford, Ohio, Pettit, Princeton, Providence, Selby Station, Sheffield, Tiskilwa, Tryxton, Walnut, Wyanet, Yorktown.

Calhoun County.

Belleview, Deer Plain, Farrowtown, Gilead, Hamburgh, *Hardin*, (c. h.,) Monterey, News, Vedder.

Carroll County.

Argo, Bluffville, Cherry Grove, Elk Horn Grove, Fair Haven, Milledgeville, *Mount Carroll*, (c. h.,) Polsgrove, Rock Creek, Savanna, Spring Valley.

Cass County.

Arenzville, Ashland, Beardston, Berryton, Chandlerville, Hagley, Jersey Prairie, Lancaster, Virginia.

Champaign County.

East Bend, Homer, Mahomet, Newcomb, Pera Station, Pesotum, Point Pleasant, Rantoul Station, Saint Josephs, Sidney, Sodorus, Tolona, *Urbana*, (c.h.,) West Urbana.

Christian County.

Assumption, Blueville, Buckhart, Kippersville, Mount Auburn, Owaneco, Pana, Rosemond, Stonington. *Taylorsville*, (c. h.)

Clark County.

Anderson, Casey, Clark Centre, Darien, Darwin, Dolson, Johnson's Mills, Livingston, Margaretta, *Marshall*, (c. h.,) Martinsville, Melrose, Parker, Sacton, Westfield,

Clay County.

Bible Grove, *Clay City*, (c. h.,) Flora, Hard, Ingraham Prairie, Larkingsburg, Louisville, Sutton's Point, Xenia.

Clinton County.

Aviston, *Carlyle*, (c. h.,) Collins Station, Germantown. Jamestown, Keyesport, Looking Glass, Shoal Creek Station, Trenton, Wittemberg.

Coles County.

Areola, Ashby, Ashmore, Bourbon, Brushy Fork, Camargo, Campbell, Charleston, Fuller's Point, Hermitage, Mattoon, Milton Station, Oakland, Paradise, Rural Retreat, Springville, Tuscola.

Cook County.

Ainsworth Station, Barrington Station, Bloom, Brickton, *Chicago*, (c. h.,) Comorn, Elk Grove, Evanston, Glencoe, Gross Point, Hope, Jefferson, Lemont, Leyden, Leyden Centre, Lyons, Lyonsville, Maine, Mainville, Matteson, New Bremer, Niles, Northfield, Noyesville, Orland, Palos, Plum, Proviso, Ringgold, Shaumburgh, South Northfield, Strasburgh, Thornton, Thornton Station, West Northfield, West Wheeling, Wheeling, Winnetka, Worth.

Crawford County.

Annapolis, Bell Air, Eaton, Elkton, Flat Rock, Hardinsville, Hutsonville, New Hebron, Oblong, *Palestine*, (c. h.,) *Robinson*, (c. h.,) Stiflesville, Vernon York.

Cumberland County.

Cornton, Greenup, Hazle Dell, Johnstown, Majority Point, Neoga, Woodbury.

De Kalb County.

Blood's Point, Courtland Station, Deerfield Prairie, De Kalb Centre, Dorset, Freeland, Genoa, Hick's Mills, Kingston, Lacy, La Clair, Malta, New Lebanon, Ney, North Kingston, Ohio Grove, Pierceville, Ross' Grove, Sandwich, Shabbona's Grove, Samonauk, South Grove, Squaw Grove, *Sycamore*, (c. h.,) Van Buren.

De Witt County.

Clin'on, De Witt, Santa Anna, Tunbridge, Wapella, Waynesville.

Du Page County.

Addison, Babcock's Grove, Big Woods, Bloomingdale, Bonaparte, Cass, Cottage Hill, Danby, Downer's Grove, Fullersville, Lisle, Naperville, Sagone, Turner, Warrensville, Wayne, Wayne Centre, Wheaton, Winfield, York Centre.

Edgar County.

Baldwinville, Bloomfield, Bonwell, Dudley, Elbridge, Grand View, Kansas, Logan, *Paris*, (c. h.,) Vermillion.

Edwards County.

Albion, (c. h.,) Mills Prairie, Maple Grove, West Salem.

Effingham County.

Edgewood, Effingham. Elliottstown, Ewington, Freemanton, Mason, Salt Creek, Tentopolis.

Fayette County.

Bowling Green, Cumberland, Farina, Hickory Creek, Howard's Point, La Clede, London City, Prairie Mound, Ramsey, Shabonier, *Vandalia*, (c. h.)

Franklin County.

Benton, (c. h.,) Big Muddy, Cave, Crittenden, Ewing, Fitt's Hill, *Frankfort*, (c.h.,) Hall, Little Muddy, Marcy, Osage, Parrish, Pleasant Shade, Town Mount, Webb's Prairie.

Fulton County.

Astoria, Avon, Bernadotte, Canton, Copperas Creek, Cuba, Duncan's Mills, Ellisville, Fairview, Farmington, Flatt, Fulton Centre, Ipava, Lewistown, Liverpool, Maple's Mill, Marietta, Middle Fork, Middle Grove, Midway, Otto, Saint Augustine, Summum, Table Grove, Troy Mills, Vermont, Virgil.

Gallatin County.

Buffalo, Cottonwood, Christmasville, Crawford, *Equality*, (c. h.,) New Haven, New Market, Overton, Robinett, Saline Mills. Shawneetown, South Hampton.

Greene County.

Athensville, Bluff Dale, Breese, *Carrollton*, (c. h.,) Fayette, Greenburg, Greenfield, Jalapa, Kane, Negro Lick, Pioneer, Rockbridge, White Hall.

Grundy County.

Gardiner, Mazon, Minooka, *Morris*, (c. h.,) Sandy Ridge, Vietta.

Hamilton County.

Belle Prairie, Buck, Griswold, Lane's Cross Roads, Logansport, Lovilla, *McLeansboro'*, (c. h.,) Night's Prairie, Palo Alto, Rectorville.

Hancock County.

Appaneese, Augusta, Basco, *Carthage*, (c. h.,) Chili, Chili Centre, Dallas City, Durham, Elvaston, Fountain Green, Golden's Point, Hamilton, La Harpe, McGary, Middle Creek, Nauvoo, Pilot Grove, Plymouth, Pontoosac, Pulaski, Rough and Ready, Saint Albans, Saint Marys, Sylvan Dale, Walker, Warsaw, Webster, West Point, Wythe.

Hardin County.

Cave in Rock, *Elizabethtown*, (c. h.,) Martha Furnace, Rosiclare.

Henderson County.

Biggsville, Station, Hopper's Mills, Olena, Oquawka, Oquawka Junction, Raritan, Rosetta, Shokoken, Terre Haute.

Henry County.

Andover, Annawan, Atkinson, Bishop Hill, Burns. Cambridge, Colona Station, East Cambridge, Galva, Geneseo, Green River, Kewannee, Minersville, *Morristown*, (c. h.,) Mount Vista, Munson, Orion, Oxford, Pink Prairie, Saxon, Sharon, Weller, Wethersfield, Woodhull.

Iroquois County.

Ash Grove, Ashkum, Beaverville, Belwood, Bulkley, Chebanse, Clifton, Courtright's Mills, Del Rey, Democrat, Donovan, Farmer's Farm, Gilman, Iroquois, Lavine, L'Erable, *Middleport*, (c. h.,) Milford, Oakulla, Onargo, Plato, Rinosa.

Jackson County.

Ava, Bradley, Carbondale, De Soto, Grand Tower, Makanda, Murphysborough, Worthington.

Jasper County.

Cartersville, Hidalgo, Island Creek, *Newton*, (c. h.,) Pickwick, Rose Hill, Saint Marie, Shorb, Wetweather, Willow Hill, Yale.

Jefferson County.

Blue Ridge, Fair Play, Ham's Grove, Lisenbury, Moore's Prairie, *Mount Vernon*, (c.h.,) Rome, Spring Garden.

(To be continued.)

WOODEN GAS PIPES.—Mr. Wm. Stephenson, the gentleman who is erecting the gas works in Fremont, Ohio, has obtained a patent from Washington on his wooden gas pipes. These pipes are coated on the outside with coal tar, and on the inside with sulphur and graphite, which renders them as indestructible as iron. The wooden pipes not being liable to expand and contract horizontally under different degrees of temperature, like iron, do not become leaky at the joints and waste the gas, as is the case with iron pipes. The effect of the earth's moisture is, if any, to make the joints to fit more securely, and to remove the possibility of any gas escaping. In all works where iron pipes are used, a very large margin is always allowed for leakage. Wooden pipes are therefore a great economy, not only as regards their cost, but in the saving of gas. Mr. Stephenson has already tested them in Galion and Delaware, Ohio, where they are now in use, and give the most complete satisfaction, being regarded as greatly superior to iron pipes.

FURNACES FOR THE DISTILLATION OF COAL.—An invention, the object of which is to obtain by a simple and improved method a perfect carbonization of coal—that is to say, free from all its tarry and volatile substances, and also an actual distillation by collecting each of these substances separately by means of an apparatus placed over the oven, has been provisionly specified by Mr. A. Bertholon, of St. Etienne, France. The apparatus is so constructed as to yield besides coke, essences, oils, gases, and even coal black or smoke black, so that no substance is lost in the process of coking. The improved oven is so arranged that the flame produced in the furnace rises into a straight inclined flue, and then at the bottom of the oven, divides into two branches right and left. The two columns or branches of flame thence pass each into semi-circular flues that are built in a manner of a labyrinth, and they finally descend into an underground flue, the orfice of which is at the centre of the circumference of the oven. The two columns of flames, thus heat on their passage the sole on which the coal lies, thus exposing it in its entire extent to the action of heat. The oven is charged in such manner as to leave sufficient vacant space for the products of distillation. The two columns of flame after having descended into the underground flue, are converted into one column of smoke, which passes into chambers, there to leave its solid particles in the shape of smoke or coal black. The distilling apparatus may be described thus:—A number of coke ovens being set in a line he applies to their orfices cast-iron pipes having a cap or dome, into which the substances developed by coking enter. These said pipes have elbows by which they join a large main pipe, into which the products collect. At the end of said main pipe he applies first a cock or tap, by means of which he regulates the draught, and next in place a running hole, which opens in a suitable vessel for receiving the products resulting from the first condensation by the action of the cold air. The main pipe is then connected with a coil, which is immersed in a tub filled with water by which means another condensation is obtained, and coal tar is produced which is more pure and less hydrated than that obtained by the first condensation. On leaving this tub the pipe assumes a less diameter and forms another coil, which is likewise immersed in water. The third condensation thus obtained produces gases in the first instance, which escape through a piece of pipe placed at the top part of the tub, or rather at a higher level, and in the second instance oils or essence, which fall to the lower part of the tub.

HUNTSVILLE, ALA.—Rosin-gas works, built by Bidwell, Pitkin & Co. Changed from rosin-oil works, because they made a loss of $50 per month. This is the concern which the engineer reported paid 50 per cent. per annum, and it took six months to find a man able and willing to tell the truth about them. It is a small potato concern, at best, the capital being but $7,335, still it was desirable to have its report to complete the tables. We thank Mr. Dickson for his trouble.

SUBWAYS FOR GAS AND WATER MAINS.

On page 171, Vol II., of the JOURNAL, it was stated that a subway had been constructed in London, in a new street, commencing at the junction of Longacre and St. Martin's Lane, running to Covent Garden. The design of this subway is to afford a receptacle for gas and water mains, where they are readily accessible for repairs or examinations, without the delay and inconvenience of digging up the street. The plan consists chiefly of a central continuous passage or subway, extending the whole length of the street, of sufficient dimensions (12 feet by 6 feet 6 inches) to admit of the deposit of any requisite number of gas and water mains, with ample working room for alterations, additions or repairs. Under the centre of this passage runs the sewer, to which means of access by man-holes are provided at convenient distances, as also ventilating shafts, gullies, &c. Side arched passages communicating with the central way are constructed between every two houses, in which the service pipes are carried from the mains into the open areas in front of the houses, and open channels are left in the footings of the walls dividing the house vaults, through which the service pipes are passed, without any interference with the structural arrangement, and these channels, although of small dimensions (4½ inches by 3 inches), being always left open, act as drains for the admission of air from the open areas to the central passage, which in conjunction with ventilating shafts at convenient distances into the roadway, secure an ample current of air for all the purposes of ventilation. An entrance into the main passage is provided in Rose street, similar to the ordinary side entrances, but of such dimensions as to allow of the ready admission of the main pipes for gas and water, which, as all the service pipes are laid in sunken channels, can be readily carried to any required point on a small truck kept in the subway for the purpose. Provision has also been made for the hydrants or fire-plugs, and for the service of the street lamps, but these are matters of detail which will doubtless be subjects for final arrangements with the different companies.

Few persons have any idea of the labyrinth of pipework which lies under the surface of some of the great thoroughfares of London, unless they may have accidentally seen a section of the pipeage laid bare when the streets have been excavated for the purpose of making repairs to the mains. In Regent street, for example, there are nineteen lines of mains of various calibre, from the 10 inch bore down to about 3 inch, which have accumulated from time to time as the consumption of gas and water, and competition have increased. With such a multiplication of pipes, alterations or repairs to some or other of them, must necessarily be of frequent occurrence, and consequently the roadway is being perpetually broken up to get at the mains beneath, thus causing great inconvenience, as well as inflicting permanent injuries to the pavements, to say nothing of the loss inflicted on the parish on which devolves the charge of maintaining the roads. A few years ago, an entire new road was laid down by Mr. Cary, on his improved sub-cushion principle, but it was scarcely completed before the workmen commenced to dig holes to get at the gas and water mains. In the space of 20 months, no less than 359 trenches had been dug in it, and of course the uniform regularity of the road was destroyed.

The new street above spoken of, is the only one in which a subway has yet been constructed, although the subject of building them in Regent street and other thoroughfares, is being agitated with considerable earnestness. The saving to gas companies by the use of the subway would be incalculable. The Chartered Gas Company, on the occasion of a conference with the St. James' vestry, on the 13th of September last, admitted that the loss of gas by leakage, from the works to the various points of consumption, was 22 per cent. of the entire manufacture. It is estimated that this loss by leakage might he almost entirely prevented by the use of the subway, as the facility afforded for daily inspection and immediate repair would admit of the maintainance of the mains gas-tight and water-tight, as in ordinary house fittings. The importance of the subway to water companies would be no less apparent than to the gas companies; since the leakage from the gas-mains which is now imbibed to some extent by the soil, and there undergoes chemical changes, attacks the water mains as well as those used in conveying the gas, and by decomposing the metal of the pipes, increases the disposition to leakage, and thus serious loss occurs to both companies. Professor Spencer, in his report to the New River Water-Works Company, on the corrosion of iron mains from the effects of gas leakage, estimates the total loss from leakage through the joints of gas mains at 630,000,000 cubic feet per annum, all of which is absorbed into the earth. In speaking of the premature decay of the iron mains that takes place in some of the streets in London, Professor Spencer arrives at the conclusion that such decay is caused by the gas that is always escaping from the joints of the gas-mains, not directly by the action of the gas itself—for this alone is harmless to the iron—but by an "acrid alkaline fluid," a sort of distillation, as it were, from the gas-charged earth, by means of moisture from the rain-fall, which fluid, coming in contact with the metal of the pipes, produces profuse corrosion, and the iron is gradually oxidized.

In a sanitary point of view, this enormous annual leakage calls loudly for a remedy, and the advocates of the subway contend that by its use all these evils may be averted, and it is probable that if the one just completed answers the purpose for which it was built, others will be adopted, particularly in those streets where a number of mains are laid, and the example will then doubtless be followed in our own principal cities.

ON THE PREPARATION OF ARTIFICIAL COLORING MATTERS WITH THE PRODUCTS EXTRACTED FROM COAL-TAR.

By M. E. KOPP.

[Abridged from the *Moniteur Scientifique.*]

[Continued from page 167.]

There is a second aniline compound in which two equivalents of hydrogen are replaced by two equivalents of nitrous acid, dinitraniline $= C_{12}H_5(NO_4)_2N$. By the prolonged action of sulphuretted hydrogen and ammonia on nitraniline and dinitraniline two new bases are produced—*azophenylamine* and *nitrazophenylamine*. The following equations express the reactions which take place:

$$\underset{\text{Nitraniline.}}{C_{12}H_6N_2O_4} + 6HS = \underset{\text{Azophenylamine.}}{C_{12}H_8N_2} + 4HO + 6S$$

$$\underset{\text{Dinitraniline.}}{C_{12}H_5N_3O_8} + 6HS = \underset{\text{Nitrazophenylamine.}}{C_{12}H_7N_3O_4} + 4HO + 6S$$

The second of these bases, nitrazophenylamine, merits some attention, inasmuch as it offers some resemblance to the colored derivatives of aniline. It is prepared in the following manner:*—Dinitraniline is boiled for two hours with a great excess of sulphide of ammonium. The liquid soon becomes dark red; the yellow crystals of dinitraniline disappear, and are succeeded by a network of delicate needles, of a deep red color, the quantity of which is much increased on cooling the liquid after the reaction has terminated. Oxalic and hydrochloric acids dissolve the nitrazophenylamine, leaving the precipitated sulphur, and also a secondary crystallized product of a dirty green color. The base may be obtained pure by precipitating a boiling oxalic or hydrochloric solution with ammonia and re-crystallizing two or three times from a solution in hot alcohol. In this way nitrazophenylamine is obtained in long slender needles, united in groups, having a clear red color when dry, and showing a golden irridescence. Water, alcohol and ether easily dissolve it, and the concentrated solutions are of a deep red color. It melts at a high temperature, and the greater part is volatilized apparently without alteration. Heated suddenly, it slightly explodes, leaving a carbonaceous residue.

The salts of nitrazophenylamine are very beautiful compounds, characterized by a dichroism which causes a peculiar irridescence in reflected light. All the salts must be crystallized in the presence of an excess of acid, since both water and alcohol decompose the neutral salts.

Fuschine prepared by chloride of tin, according to the process of MM. Renard and Franc, appears to be the hydroclorate of a base, the properties of which greatly resemble those of nitrazophenylamine. The crystallized salts show the same colored reflections, and are decomposed (in part at least) by water and alcohol, the solutions being of a deep red color.

We now proceed to notice the processes for the preparation of coloring matters by means of aniline, and the method of employing them for dyeing fabrics and yarns.

The first on the list is that of Mr. Perkin, for the preparation of aniline, violet or mauve. A cold solution of sulphate of aniline (rough aniline is used) and a cold solution of bichromate of potash are mixed together and left for ten or twelve hours. An abundant deposit of a black powder is thus obtained, which is separated, well washed with water, and, lastly, dried at 212°. The dried substance is then digested several times with naphtha or commercial benzole, which dissolves a brown tarry or resinous substance, contaminating the coloring matter in the deposit. The residue insoluble in the naphtha is dried again, and then digested with wood spirit or alcohol, or any other liquid able to dissolve the coloring matter. This clear solution is decanted and distilled to recover the solvent. The residue of the distillation is anileine, or aniline violet.

Mr. Perkin gives the following directions for dyeing with anileine:—To dye a lilac or purple, an alcoholic solution of the coloring matter is added to a boiling dilute solution of oxalic and tartaric acids, and when the mixture has cooled, the materials to be dyed (silk, cotton, &c.) are to be completely immersed in the bath. Mr. Perkin's patent is dated Aug. 26, 1856. In the early part of 1859, M. Verguin, a chemist at Lyons, while experimenting with aniline, discovered a process for converting it into a magnificent purple red coloring matter. M. Verguin sold his process to MM. Renard and Franc, who patented the process in France on the 8th of April, 1859, and gave the new coloring matter the name of fuschine. The process is as follows:—A mixture of ten parts of aniline with six or seven of anhydrous chloride of tin is boiled for fifteen or twenty minutes. The mixture at first turns yellow, then becomes reddish, and ends by assuming a beautiful red color when seen in thin layers; in the mass it appears black. Water is now added, and the whole is heated to ebullition. It is then removed from the fire, allowed to rest a moment for some insoluble matters to deposit, and then filtered while still hot; the residue is exhausted by another boiling with water. The filtered liquor contains the coloring matter in solution. To separate it, advantage is taken of its being insoluble in a saline solution; accordingly, chloride of sodium or a neutral tartrate of potash or soda, in a solid state, is added to the liquor, and as the salt dissolves the coloring matter is deposited. It may then be separated by decantation or filtration.

Fuschine may be employed for dyeing either in aqueous solution, without a mordant, or with the ordinary saline or acid mordants, always excepting the mineral acids which alter the color.

A red color is also obtained by acting on aniline with other anhydrous metallic chlorides—bichloride of mercury, perchloride of iron, protochloride of copper, for example. In October, 1859, MM. Renard and Franc added to the above three anhydrous chlorides the hydrate of bichloride of tin, as being equally able to change aniline into fuschine. A second edition to the patent, in November, 1859, extended the list of coloriginous agents by including the stannous and stannic sulphates, the mercurous and mercuric sulphates, mercurous and mercuric nitrates, nitrate of silver, titanic chloride, mercuric fluoride, stannic and mercuric bromides, and stannic iodide. A third addition, in the same month, added the ferric and uranic nitrates, uranic chloride and mercuric chlorate, bromate, and iodate. Sesquichloride of carbon and iodoform were afterward added in December of the same year. Lastly, a fifth addition was made in February, 1860, the purport of which the author does not exactly know, but which he believes, includes iodine, arsenic acid, and nitric acid.

We must here quote from the paper by Dr. Hofmann, presented to the Academy of Sciences, on September 20, 1858,* and entitled, "Contributions to the History of the Organic Bases: IV. Action of Bichloride of Carbon on Aniline":*—

"At the ordinary temperature of the air, aniline and bichloride of carbon do not act on each other. At 100° C. the mixture begins to change; but after digesting for some days, the change is far from being complete. By submitting, however, a mixture of one part of bichloride of carbon and three parts of aniline, the two bodies being in the anhydrous state, to a temperature of 170° or 180° (the boiling point of aniline) for nearly thirty hours, the liquid is changed into a blackish mass, soft and viscous, or hard and brittle, according to the duration of the temperature. This blackish mass is a mixture of several bodies. By exhausting with water a part is dissolved, another part remaining insoluble in a resinous state. With the aqueous solution, potash gives an oily precipitate, which contains a considerable proportion of unchanged aniline. On distilling this oily matter with diluted potash, aniline passes; while a viscous oil, which solidifies by degrees, remains behind. Repeated

* Gerhardt, *Chimie Organ.* iii., p. 105; Gmelin's "Handbook," xi., p. 294.

* *Comptes-Rendus*, t. xvii., p. 492.

washings with cold alcohol, and one or two crystallizations from boiling alcohol, render the body perfectly white and pure; a very soluble substance of a *magnificent crimson color* remaining in solution.

"The blackish portion of the mass which remains insoluble in water, is easily dissolved by hydrochloric acid; from this solution it is again precipitated by alkalies, as a dirty-red amorphous powder, soluble in alchohol, and forming a *rich crimson-colored solution*. The greater part of this coloring matter is the same as that which accompanies the crystalline fatty body, considerable quantities of this latter substance being sometimes found in the product insoluble in water."

The great resemblance between the experiments of Dr. Hofmann and the process of MM. Renard and Franc is evident. If, as appears from the fourth addition to their patent, fuschine may be prepared by boiling sesquichloride of carbon with aniline, it is quite clear that Dr. Hofmann had fuschine in his hand, and that it is identical with the substance which gave a magnificent crimson solution. It is right, however, to add, that if Dr. Hofmann was the first who obtained fuschine as a secondary product in his theoretical experiments, M. Verguin has certainly the merit of having modified the process, so as to make it capable of industrial application.

In October, 1859, M. Gerber-Keller patented in France the preparation of a red coloring matter, which he called Azaleine, "by means of aniline treated under the influence of heat, and in proper proportions with several salts which are formed by the oxyacids of nitrogen, sulphur, chlorine, bromine, and iodine with metallic oxides." We shall complete this too concise and consequently obscure description of the process by adding what is known respecting the preparation. The salts preferred by the author are the mercurous and mercuric nitrates. Aniline is carefully heated to about 150° C., and nitrate of mercury in powder is then dropped in, a small quantity at a time. A higher temperature than 150° must be avoided, or the action becomes too violent, and the coloring matter is destroyed. At every addition of the mercury salt a sort of ebullition is produced, the consequence of the reaction which takes place; metallic mercury is deposited at the bottom of the vessel, and the liquor gradually acquires a deep crimson color. After being decanted, the whole is allowed to cool, and the coloring matter is now washed with a little water and dried. It is then freed from tarry matters by repeated washings with commercial benzine, and finally dissolved in alcohol or wood spirit, the solution being re-precipitated with water, &c., again and again, until the product is sufficiently pure. Absolute purity is not necessary for either dyeing or printing.

Azaleine is soluble in water, but much less so than in alcohol. For dyeing silk and wool, alcoholic solutions are preferred: for printing on cotton, a dilute alcoholic is thickened with gum.

We have recently heard that the process now employed by M. Gerber-Keller is the following—ten parts of aniline are heated on a water bath to 100°, and seven parts of mercuric nitrate, dry and in powder, are added by degrees. The mixture is maintained at the temperature of 100° for eight or nine hours, in which time the mass will have become of magnificent violet-red color. On cooling, it forms a thick paste. The greater part of the reduced mercury is found at the bottom of the vessel. To employ the azaleine then produced as a dye or for printing, it is only necessary to treat the pasty mass with boiling water, a mixture of water and alcohol, acetic acid, or any other solvent, and make use of the solution.

The advantage of the last process consists in the moderate heat required, a high temperature seeming to cause the formation of tarry matters.

Mr. Albert Schlumberger has also described (*Bulletin de la Société Industrielle de Mulhouse*, March, 1860, p. 170) a process for converting aniline into a red coloring matter by means of the neutral nitrate of mercury. He takes 100 parts of anhydrous aniline, and sixty parts of the nitrate of mercury, and heats the mixture to boiling. The mass slowly changes color, at first becoming brown, but in time the whole is transformed into a beautiful red liquid. The operation is finished when the boiling materials are observed to swell up, and disengage yellowish vapors. The mass so obtained is washed with two or three times its volume of boiling water, to remove the oils which are not completely metamorphosed, and then boiled two or three times with water to extract the coloring matter.

In this process, as well as in the preceding, the whole of the mercury is recovered.

In May, 1860, MM. Girard and Delaire obtained a patent for the use of the arsenic acid in the preparation of a red coloring matter from aniline. They introduce into a distillatory apparatus twelve parts of dry arsenic acid, and twelve parts of water. When the hydration of the arsenic acid is complete, they add ten parts of aniline, and shake the whole well together. The mass becomes homogeneous, pasty, and almost solid. A gentle heat is then applied, so as to raise the temperature of the mixture gradually. The mass now becomes liquid. When the operation is properly conducted, only water and a very small quantity of aniline distil. At 120° a great part of the aniline is changed into the coloring matter, and care must be taken to keep the mixture at this temperature for some time. The heat may then be increased, and it must never pass 160°. The operation lasts four or five hours.

In the above way a perfectly homogeneous mass is obtained, which is fluid above 100°. On cooling it solidifies, and has the appearance of a hard, brittle substance, with a bronze lustre. It is very soluble in water, to which it communicates a pure red color, so deep that concentrated boiling solutions appear black. The solutions may be used for dyeing directly without fear, for the tissues will not retain a trace of the arsenic. If necessary, the arsenic may be easily removed from the coloring matter by one of the following processes:—

1. Powder the rough product and treat it with strong hydrochloric acid; then dilute with water and saturate the clear solution with a slight excess of soda. The coloring matter is precipitated, while the arsenic remains in solution in the alkali, and it is only necessary to wash the precipitate once or twice with cold water to obtain the coloring matter quite pure.

2. The rough product dissolved in water is treated with a quantity of quick lime corresponding to the arsenical compounds it contains, *plus* a slight excess. The coloring matter is precipitated, as well as the arsenical compounds—the latter in the form of insoluble calcareous salts. The liquor and the precipitate (unseparated) are now treated with carbonic, acetic, or tartaric acid, either of which will dissolve the coloring matter and leave the arsenic.

In this process, aniline gives about its own weight of coloring matter.

The process of MM. Depouilly and Lauth, "for the manufacture of various colored products derived from aniline," is very similar to that of Mr. Perkin. They take a solution of a salt of aniline and treat it with a solution of chloride of lime. The first drops of the chloride produce a violet coloration, and on continuing the addition of the re-agent, a deep violet precipitate is formed, which constitutes the coloring matter. This is collected and washed with slightly acidulated water. When the washings are uncolored, the precipitate is collected on a filter, and drained. It is then dissolved in a strong acid—sulphuric for example—and re-precipitated by the addition of a large quantity of water, or by an alkaline solution. The product is thus obtained sufficiently pure for sale. For dyeing and printing, alcoholic acid or aqueous solutions may be used, according to the nature of the article to be dyed and the purity of the color required.

(*To be continued.*)

Coal Oil Lamps.—The common lamps for burning this oil are furnished with a hollow wick cone, perforated at the bottom to admit a current of air to the flame. It is ordinarily placed above or on a level with the wick tube, and obscures a portion of the light. A patent has been issued in England to J. Hinks for placing a conical deflector below the top of the wick tube, so as to make the air impinge on the flame at about the top surface of the wick tube; the latter is also made in two parts, joined by a perforated collar, which admits air up to the central part of the wick of the lamp. It is stated that a more brilliant flame is obtained by this arrangement.

Elizabeth, N. J.—One of S. S. Battin & Co's. gas-works, and like all of their works, very good and very satisfactory to the company. Have used R. Campbell's iron retorts, but have ordered clay retorts from Elliman Brothers, and Code, Hopper & Gratz's; S. Down's & Smith's meters, (who is Smith?) Ayres & Floyd's gas-holder; no photometer nor exhauster, (why not?) Mix Newcastle and Cannel coal, at $7 72 and $9 40 respectively. Company prosperous and well managed. Jerseymen count the dollars that go out, and keep those that come in. All right.

FOREIGN NEWS.

REFUSAL OF A GAS COMPANY TO SUPPLY GAS TO A CONSUMER—COLLUSION BETWEEN TENANTS.

Thames Police Court, London.

Before Mr. Yardley.

Miller *vs.* the Commercial Gas Company of London.

This was an action brought by one Morton Miller, a lodging-house keeper, against the Commercial Gas Company, for having for seven days after being thereunto required, in writing, to provide and lay all proper and sufficient communication service and other pipes to the house No. 50 High Street, London, whereby they had incurred a penalty of 40s. for every day after the expiration of such notice, during which the failure continued." The plaintiff stated that the Company refused to supply him with gas because he declined paying the arrears of the outgoing tenant, amounting to about £8, and they alleged that there was collusion between the parties, which he denied.

Mr. Clarke, who appeared for the complainant, said that for many years past the tradesmen of the metropolis and the public generally had been subjected to a very arbitrary and despotic rule adopted by the gas companies, who insisted, as a condition precedent to the supply of gas to an incoming tenant, that he should pay any debt due to them by his predecessor. There was a complete conspiracy, as he might term it, amongst the gas companies to obtain money in a way which no other body would dare to attempt.

Mr. Cripps appeared for the Gas Company, and between him and Mr. Clarke a running fire was kept up for some time, which Mr. Yardley appears to have borne very good naturedly, in order to let off the usual supply of legal gas without a serious explosion. Mr. Yardley read the 39th section of the 23d and 24th Vic., cap. 125, which applies to this case. It is as follows: "In case any consumer leave the premises where gas was supplied to him without paying to the gas company the rate or meter rent due from him, the gas company shall not require from the next tenant of the premises payment of the arrears so left unpaid, unless the incoming tenant agreed with the defaulting consumer to pay the arrears; but the gas company shall, notwithstanding such arrears, in the absence of collusion between the outgoing and incoming tenant, supply gas to the incoming tenant, as required by this Act, on being required by him so to do."

The upshot of the testimony, which was long and contradictory, appeared to establish these facts: The house in question was built by one David Simpson, who rented it to one William Miller, who soon failed, and was succeeded in its occupation by his mother, Jane Miller, who paid the rent, through a man named Dickinson, up to a certain time, when he ceased his payments not only to the landlord but to the gas company, who cut off the supply from the house. The complainant, Morton Miller, formerly a waiter at the same house under Dickinson, then took possession of the premises, with the owner's (Simpson's) consent, but it appears no lease was executed between them, although a rate of rent was agreed upon, and he swore directly that there was no relationship nor even friendship existing between him and the other Millers. There were about 70 beds in the house, but he did not know to whom they belonged, nor did the landlord, (Simpson,) although they believed them to be the property of Dickinson.

Mr. Yardley gave the landlord and tenant a thorough sifting, from which he made up his mind clearly that the entire proceeding was a collusion between Miller, Dickinson and Simpson, judging from the unsigned agreement, and from the fact that neither of the men, admitted that they knew to whom the beds, which are really the most substantial things in a lodging-house, belong, and further, that in reality Mrs. Jane Miller was in fact the real, substantial tenant. The summons was accordingly dismissed.

Mr. Yardley would find a fallow field on this side of the Atlantic to cultivate in the way of collusive tenants to cheat gas companies.

Marietta, O.—E. Gwynne, builder of gas-works; iron retorts, from Gaylord & Son, Cincinnati, O.; meters from Code, Hopper & Gratz, and Baltimore, Md., Meter Co.? (who, what, and where is this Baltimore Meter Co., we have never been able to trace it). Use Monongahela coal, costing 9 cents per bushel of 70 lb.—about 28 bushels per ton.

REPORTS OF GAS-LIGHT COMPANIES.

ST. LOUIS, MO.

THIRTEENTH ANNUAL REPORT.

The Directors of the St. Louis Gas-Light Company take pleasure in making to the Stockholders the following Annual Report for the fiscal year ending November 30, 1860.

The last of the additions and improvements to the Station Works, which were not yet completed at date of the last Report have been finished since May last. The exhausters, an essential part of those additions, work well and give the utmost satisfaction. By reference to the Report of the Engineer, it will be seen that, with their use and the use of the clay retort combined, an increase of 6¼ per cent. of the gas made has been obtained; and that, too, with a less number of retorts than was used last year.

The superiority of the clay retort over the iron cannot longer be questioned. It is more durable, and will last probably two years, while the iron can be used but one year. Moreover, the coal can be distilled much closer, in consequence of the greater heat that can be generated in it. Such, therefore, being some of the advantages of the clay retort, the iron retorts have been removed as fast as they wore out, and c'ay ones put in their places; so that the clay retort is now used altogether at our works.

It was stated, in the last Annual Report, that the only heavy expenditure the Company would be called on to make during the then next five or six years, would be for the laying of Street Mains, because of the completeness of the additions and improvements to the Station Works. The Board can now reiterate that statement, and again say to the Stockholders that, except for the laying of additional Street Mains, there will be no necessity for further expenditures of any considerable amount.

The Stockholders were informed, in the last annual Report, that the city of St. Louis had, on the 29th June, 1859, given notice to the Directors of this Company of her intention to purchase the works of the Company on the 1st January, 1860. Your attention was also called to the fact that the city had, by a certain contract with this Company, dated 11th April, 1846, relinquished her right to buy at the first period, namely, January 1, 1860.

You are now informed that, notwithstanding that act of relinquishment, the City Council, on the 17th July last, passed a bill to purchase the Works of the St. Louis Gas-Light Company; and that the Mayor of the city notified this Company under date of 26th July last, to the effect that arbitrators had been appointed, on the part of the city to appraise the works; and requesting the Gas-Light Company to appoint a like number of appraisers.

At the time the above notice was received from the Mayor, there was not a quorum of the Board in the city. Your Pre ident, however, acknowledged its receipt verbally, and in person informed his honor the Mayor that, as soon as a quorum could be obtained, the notice would be duly considered and answered by the Board.

Accordingly, on the 25th of October last, the Board passed a resolution declining the city's proposition to buy the works on the 1st January, 18 0; and a copy of the resolution was transmitted to the Mayor by your President.

Nothing fur her in the matter has been done by the city, up to the date of this report.

The suit against this Company, instituted by the Laclede Gas-Light Company, in 1858 and of which you were apprised in the report of that year, has not yet come to a trial.

The last of the Company's Bonds issued July 1, 1855, by direction of the Stockholders, were paid July 1, of the present year; so that the Company has now no outside debt. The Sinking Fund of five per cent. per annum which was created for the special purpose of meeting those bonds, and the interest thereon, ceased on the 1st July last and the account was then closed.

Your Board has since by resolution created another Sinking Fund (called Sinking Fund No. 2) of 2½ per cent. semi-annually for the purpose of paying the Bonds issued to the Stockholders, falling due 1st July 1865. It is intended to invest this fund, meanwhile, to the best advantage.

The Board has sold to Messrs. Reynolds & Walsh, the office property on Pine Street, for the sum of $25,000. The Company reserves the privilege of keeping possession of the property, for office purposes, for four years from 1st June last, at which time the sale was made. It is intended, meanwhile, to select some other locality for the Company's office. The present office is not comodious enough; nor is it altogether suitable in other respects.

By reference to the proper Table, it will be seen that over one mile of six-inch pipe has been laid, this year, on Olive Street, from Seventeenth Street westward; upwards of 2,000 feet on Franklin Avenue, from Eighteenth Street westward; and about 800 feet of four-inch on Morgan Street from Eighteenth Street westward. All of this was laid at the importunity of persons living on those lines, on their agreement to pay the Company, for a limited period, an annual interest of ten per cent on the total cost, which cost has been about $9,000. On all these lines, as well as in other parts of the city, the Mayor has given public lamps thus affording to the citizens in those neighborhoods street lights as well as gas in their houses.

The total of Street Mains laid this year is 5 miles, 795¼ feet.

The increase of Public Lamps put up and lighted this year has been 124, against 28 last year; making the total of Public Lamps now yielding an income, 1 692. The largest number of Lamps added in any one year was 374, in the year 1852; and the smallest number 18, in the year 1858.

On the 30th November, last year, there was 187 497 bushels of coal on hand; received during the present year, 461,010 bushels; making together, 648,507 bushels. Used this year, for gas-making, 366,737 bushels; leaving on hand, at this date, 281,770 bushels, a quantity sufficient to last till next Fall. Early next Spring, the contractor will commence the delivery of the supply for 1861, a portion of which, he informs us, he has already in boats. So that no fears can reasonably be entertained of any failure of a supply of coal for the next two years, at least.

The total quantity of Gas manufactured this year has been 114,000 000 cubic feet; being 12,243,000 feet more than last year, an excess of 1 000,000 feet per month. The quantity now on hand is 670,124 cubic feet.

For particulars respecting the Gas manufactured and the improvements to the Works, you are referred to the very satisfactory Report of Mr. Pratt, the Engineer, herewith.

Your attention is also directed to the full Report of Mr. Largue, the Inspector, for particulars touching the Meter and Service department.

The following is a summary of the several Tables appended to this Report, to which, as well as the Tables themselves, we refer you.

All of which is respectfully submitted.

JOHN D. COALTER,
JAMES SMITH,
CHAS. H. PECK, } *Committee.*

SUMMARY OF THE TABLES.

STATION WORKS.

TABLE A.

Balance, November 30, 1850,		$220,114 98
Cost Tank, Fifteenth and Gratiot Streets, transferred	99,487 95	
Cost Gas Exhausters, transferred	7,402 70	
Increase during the year ending November 30, 1860	5,687 24	
		$332,692 87

REAL ESTATE.

TABLE B.

Balance, November 30, 1859	$114,289 61	
Increase during the year ending November 30, 1860	453 72	
	114,743 33	
Less first payment on Office Property sold	5,000 00	
		$109,743 33

STREET MAINS.

TABLE C.

Balance, November 30, 1859	$277,176 75	
Increase during the year ending November 30, 1860	26,982 03	
		$304,158 78

PUBLIC LAMPS.

TABLE D.

Balance, November 30, 1859	$32,208 85	
Increase during the year ending November 30, 1860	2,968 19	
		$35,177 04

METER AND SERVICE.

TABLE E.

Balance, November 30, 1859	$55,080 50	
Decrease during the year ending November 30 1860	1,909 86	
		$53,170 64

PRIVATE CONSUMPTION OF GAS.

TABLE F.

Number of Private Consumers at date of last Report	5,091	
Increase during the year ending November 30, 1860	673	
		5,764
Number of Burners at date of last Report	44,684	
Increase during the year ending November 30, 1860	8,173	
		52,857

GAS MANUFACTURE.

TABLE G.

	Cubic Feet.
Gas on hand, November 30, 1859	275,364
Gas made during the year just closed	114,000,000
	114,275,364
Left the Works during the year 1860	113,605,240
On hand, November 30, 1860	670,124

ENGINEER'S THIRTEENTH ANNUAL REPORT.

1860.

To the President and Directors of the St. Louis Gas-Light Company:

GENTLEMEN: In accordance with custom and the requirements of the By-Laws of the Company, your Engineer respectfully presents to your consideration the following statement of the condition and operations of the Station Works under his charge, for the year ending November 30, 1860.

In order to show the true condition of the Works, and the advantages derived from the improvements made during the first half year, it becomes necessary to divide our year's operations into two equal parts: the first half-year commencing the 1st of December, 1859, and ending the 1st of June, 1860; the second half-year commencing the 1st of June, and ending the 1st of December, 1860.

In the month of May, all our enlargements and improvements, with the Exhauster being put to work, were completed.

The coal carbonized during the first six months amounted to 14,746.575 lbs., or 196.621 bushels of 75 lbs. to the bushel; and amount of gas made, 59,402 000 feet, being 4 3-100ths cubic feet to each pound of coal used. During the second half-year there was coal carbonized 12,747 675 lbs., or 169.969 bushels; and gas made 54.598.000 feet, or 4 29-100ths cubic feet to every pound of coal used; being for the year's consumption of coal for gas-making 366,590 bushels, and gas made 114 000.000 cubic feet; an increased consumption over last year of 12 243 000 feet, and a larger average of gas from the coal used than in any previous year.

The greatest consumption of gas from the Works, in 24 hours, was 515,223 feet, on the 10th of November; and the largest production 447,000 cubic feet. For purifying the gas made during the year, 17,600 bushels of lime was used. The amount of coke made was 549.582 bushels; and the amount used for carbonizing, making steam, etc., at Works, 288,282 bushels.

By referring to last year's Report, you will see that I was working 106 retorts. And now, though I am making more than one million feet of gas per month more than at that time, I am only working 78 retorts, all of which are clay, excepting three.

Thirty of the retorts now in use have been in constant work seventeen months and are still good. Each bench of three retorts working 800 lbs. of coal, at a high heat, every four hours; thus putting at rest all controversy as to the quality and the superiority of the clay over the iron retort.

This year I have received 65 retorts; had on hand, at last Report, 31; making in all 96. I have used 51, and have on hand 45, 31 of which are set in benches and ready for use.

Enlargements and improvements at Station Works this year are as follows: A new brick house, 47 by 18 feet, with iron roof, covered with slate, for condensers, washers and scrubber. A new iron-frame roof, covered with slate, put on purifying house, 47 by 47 feet. Lime house enlarged, and new iron roof, covered with slate, 80 by 60 feet. Added to coal shed, and new composition roof put upon the whole shed, 220 by 80 feet; and two lines of railway, run through the yard, for the convenience of getting coal to the retort house.

New machinery put to work: A steam engine, exhauster, and new mains, valves and connections from exhauster to purifiers; two washers and one scrubber. In consequence of the long delay in getting clay retorts from Belgium, I remind the Board of the propriety of at once ordering eighteen more, to keep up our supply for the coming year. We shall need but a small amount of brick, tile, &c., for repairs for the coming year. For the coming year my estimate for coal is 400.000 bushels.

In closing this Report, I feel that I am discharging but a simple act of justice in acknowledging to the Directory the ability and industry manifested by W. H. Corley, as Assistant Superintendent, and Benjamin Skene, as Clerk at Station Works.

For Report of Stock, Tools, &c., see Inventory and Monthly Report.

All of which is respectfully submitted.

THOS. PRATT, *Engineer.*

INSPECTOR'S REPORT,

For the year ending November 30, 1860.

To the President and Directors of the St. Louis Gas-Light Company;

GENTLEMEN: Although Table F (which see) gives a correct statement of the increase of consumers during the past year, yet I think it proper to make some additional explanations, which I hope will be interesting to you.

In looking at the Table, you will see that the increase of consumers for the months of January and February was only three; whereas we laid, in the same time, 101 services, and also set 108 meters. But the returned meters, for the same months, amounted to 100; consequently, our increase shows only three of a gain. Why so many meters were returned during January and February, is accounted for by the fact that, in the Fall of 1859, there was an unprecedented number of buildings finished; consequently, a larger number than usual were vacant in the Winter; so that, although our increase of consumers is 33 below what it was last year, there is reason to believe they will be more permanent, considering the causes alluded to.

In the past year, there has been a total of 1,169 meters set; o these, 496 have been returned, showing an increase of 673.

We have repaired, during the year, 555 meters, including 42 which have been recased, making them nearly as good as new. The meter being a very important and indispensable machine, both to Gas Companies and to consumers, it is very desirable to have the most approved kind in use; yet, I believe, it is difficult, even for practical men, of long experience, to decide between the merits of the wet and dry meters. I find the 1,200 dry meters, which the Company has in use, give more general satisfaction to consumers than the wet meter, and, I have no doubt, will continue to do so, until we get a fluid for wet meters which will not evaporate nor freeze. Such a fluid, that has both these qualities claimed for it, we are now trying; and if it should succeed, I should prefer the wet meter, as being the most durable and reliable.

A. LARGUE, *Inspector.*

SINKING FUND.

Balance, November 30, 1859		$49,045 43
2½ ₱ cent. of Earnings, May 31, 1860		15,000 00
		$64,045 43
Coupons due and paid January 1, 1860, in New York, on $38,000 Bonds	$1,140 00	
Bank's Commission for paying same	12 50	
Prem. Ex. on Draft to remit same	2 88	
Coupons due and paid July 1, 1860, in New York, on $38,000 Bonds	1,140 00	
Bank's Commission for paying, and also paying $38,000 Bonds, due July, 1860	97 85	
A portion (being balance of this acc't) of the 25 ₱ cent dividend made, and paid in Bonds at seven years, dated July 1, 1860, bearing 10 ₱ cent. interest	61,652 20	
		$64,045 43

TABLE A.

Balance, November 30, 1859		$220,114 98
Cost of Tank, Fifteenth and Gratiot Streets, transf'd		99,487 95
Expended on Gas Exhausters, to Nov. 30, 1859		5,004 79
		$324,607 72
Balance cost of Gas Exhausters	2,457 91	
Iron and Steel	1,562 78	
Labor	856 90	
Lumber	130 64	
Slate and Felt, for roofing	776 04	
Railway for Coal	141 00	
Pipe and other Castings	1,171 61	
Hauling $30 20. Wheels for Lime Cart, $16.50	46 70	
Lime, Cement, Paint, &c	68 15	
Platform Scales	90 00	
Brick, Tile and Clay	319 75	
Hose $9 55. Chains $10.90. Patterns $36	56 45	
Rock, Brick and Paving	129 32	
Cedar Posts $58.65. Rosin $34.55	93 20	
Lead, Hinges, Screws, Nails, &c	27 15	
Pillow Blocks, Valves, &c	45 60	
Boring, Turning, Drilling, &c	94 75	
Small payments	57 20	
	$8,125 15	
Less old Doctor (Engine) sold	80 00	
		8,045 15
		$332,652 87

TABLE B.

Balance, November 30, 1859		$114,289 61
Law Fees in Eject. Suit, King *vs.* G. L. Co	72 95	
Law Fees in Provonchere Claim	77 40	
Paving at old Tank, Clark Avenue and Ulrice Street	58 64	
Curbing at same	243 73	
		452 72
		$114,742 33

TABLE C.

Balance, November 30, 1859		$277,176 75
Main Pipe and other castings	22,018 60	
Labor	3,336 42	
Hauling	243 37	
Tools, and Shed for same	115 50	
Lead and Packing Yarn	1,220 79	
Coal and Wood	32 10	
Small payments	16 25	
		26,982 03
		$304,158 78

TABLE D.

Balance, November 30, 1859		$32,208 85
Lamp Posts	1,427 39	
Lamps	630 00	
Lamp Cocks	117 00	
Lamp Burners	230 00	
Labor	245 32	
Hauling	22 18	
Tubing	268 80	
Tools	27 50	
		2,968 19
		$35,177 04

TABLE E.

Balance, November 30, 1859		$55,080 50
Meters	6,364 00	
Whisky for the Meters	1,777 85	
Non freezing Fluid for Meters (for trial)	189 50	
Meter Cocks and Service Cocks	963 03	
Cedar for Service Boxes	208 80	
Lumber for Meter Boxes	307 69	
Hauling, $56.05. Rent Wagon Shed, $16..	72 05	
Freight of Pipe and Fittings	319 94	
Labor and Wages	6,517 15	
Oil, Turpentine, Lead, Charcoal, &c	88 08	
Tools	165 47	
Stabling and Shoeing Horse	163 50	
Stop Boxes and Covers	232 80	
Tubing	2,465 36	
Nails, White Lead, Tin, &c	122 69	
Pressure Register	125 00	
Fittings, and other Brass Castings	543 20	
Small payments	46 55	
		20,672 69
		$75 753 19
Less Meters sold	73 00	
" Service Pipe to Public Lamps	268 80	
" Whisky Barrels sold	85 50	
" Rent of Meters	12 009 68	
" Services laid	10,145 57	
		$22 582 55
		$53.170 64

TABLE F.

DATE.	PRIVATE CONSUMERS. ADDED	PRIVATE CONSUMERS. TOTAL.	PRIVATE BURNERS ADDED.	PRIVATE BURNERS TOTAL.	SERVICES LAID.	METERS SET. SIZE OF METERS. 2	3	5	10	20	30	45	50	60
1859—November 30,		5,091		44,684										
December, ..	37	.....	458	.....	14	9	13	10	4	1	....	....	....	.....
1860—January, ...	3	.....	30	.....	23	....	....	....	1	2	....	....	....	.....
February	....	.....	....	.....	78	....	....	....	....	....	....	....	....	.....
March, ...	65	.....	938	.....	55	12	19	28	6	....	....	....	....	.....
April, ...	50	.....	655	.....	74	4	32	6	6	2	....	...	....	.....
May, ...	49	.....	514	.....	98	16	22	8	3	....	....	....	....	.....
June, ...	49	.....	445	.....	74	22	12	15	....	....	....	....	....	.....
July, ...	36	.....	441	.....	102	11	19	6	....	....	....	....	....	.....
August, ...	62	.....	721	.....	85	10	46	6	....	....	....	....	....	.....
September, ..	125	.....	1,469	.....	65	38	62	18	3	2	....	....	1	1
October, ...	113	.....	1,290	.....	80	43	40	22	5	3	....	....	....	.....
November, ..	84	673	1,212	8,173	81	38	24	15	2	3	1	....	....	1
		5,764		52,857	829	203	289	134	30	13	1	....	1	2

TABLE G.

DATE.	Coal Received BUSHELS.	Coal Used. BUSH.	Lime Used. BUSH.	Coke Used. BUSH.	Coke Sold. BUSH.	Tar Sold. BBLS.	Gas Made. CUBIC FEET.	Gas left the Works. CUBIC FEET.	Gas Lost. CUBIC FEET.	Pub. L'mps AD. T'L	Burning of Public Lamps. HOURS.	Gas burnt by Public Lamps. CUBIC FEET.
1859—November 30.	187,947						275,364			1,568		
December....	.....	40,260	1,600	25,000	46,035	600	12,078,000	12,035,388	1 491,000	.....	235¼	2,014,294
1860—January	.....	37,133	1,550	24,955	78,362	605	11,140,000	11,082,692	975.000	2	227¾	1,945.689
February....	.....	32.425	1,400	23.876	24,724	511	9,676,000	9,748,228	904,000	.....	224¾	1,922,319
March	30,303	31,740	1,600	21,259	25,351	523	9,842,000	9,729,144	601,000	.....	196	1,673,361
April.....	87,331	30,323	1.250	23,814	21,676	400	9,097,000	8,647,132	1,562,000	1	158¾	1,364,566
May.....	119.201	24 813	1,300	18,224	18,823	330	7.569.000	7,964,022	1,600,000	6 -	153½	1,324,505
June.....	134,462	22,834	1,150	21,476	12,034	280	7,372,000	7.056,294	1,20 ,000	9	137¼	1,187,343
July.....	89,263	20,287	1,150	20,984	9,876	257	6,733,000	6,899,088	1,502,000	28	126	1,111,086
August	.....	23,247	1,250	21,638	14,232	287	7,411.000	7,870,836	2,198,000	9	135¼	1 201,097
September...	.....	27,085	1,350	25,116	15,511	441	8,700,000	9,064,824	1,969,000	4	153¾	1,847,495
October	.....	37,768	1,800	32,516	24,186	507	12,141,000	11.384.336	2,306,000	38	182	1,639,670
November...	....	38,822	2,300	32,429	25,804	577	12,241,000	12,623,256	1,550,000	27-124	210¾	1,930,564
	648,507	366.737	17.700	291 287	316,558	5.318	114,275,364	113,605,240	17.758.000	1.692	2 141¼	19.161.989

Coal on hand, November 30, 1860.....281,770 bushels.
Gas on hand, do. do. .....670,124 cubic feet.

STATEMENT

SHOWING THE ANNUAL PROGRESS OF THE ST. LOUIS GAS WORKS, FROM THEIR COMMENCEMENT IN 1847 TO 1860, INCLUSIVE.

Years. Nov. 30.	No. of Private Consumers.	No. of Priv'te Burn'rs	Total Consumption of Gas.	No. of Public Lamps.	Public Consumption of Gas.	PIPE LAID. MILES.	FEET.	INCHES.	Stockholders
1848	459	3 839	6,630,451	279	3.483,750	10	972	8	73
1849	789	5,572	13,301,482	358	3,736,651	14	63	6	87
1850	958	6,525	21.499,230	439	4,951.445	15	2,863	0	116
1851	1.362	9,540	28,256,046	678	6,885,063	24	1,798	0	151
1852	1.775	12,437	36 035,697	1,052	10,419,487	32	1,499	0	176
1853	2,191	15,509	42,941,222	1.107	11,739,775	34	1,505	0	182
1854	2,704	19.396	47,412,632	1,210	11,752.072	36	2,0 3	0	208
1855	3,096	22,953	51,929,242	1,359	14,105,530	41	153	0	215
1856	3,425	26,514	63,277,942	1,408	16,184,250	43	1,260	0	218
1857	3,857	31.829	74,616,472	1,522	17,208,200	45	3,354	0	220
1858	4,385	37,073	83,961,794	1,540	17,881,001	46	1,487	0	215
1859	5.091	44,684	102 145.920	1,568	19,105,000	47	5,012	4	203
1860	5.764	52,857	113,605,240	1.692	19,161.989	53	527	10	199

STREET MAINS LAID.

From November 30, 1859, to November 30, 1860.

TEN INCH PIPE.

	feet.	in.
Along west side of Seventh Street, from north side of Biddle to South side of Cass Avenue	1,327	0
Along west side of Fourteenth Street, from south side of Market to north side of Clark Avenue	851	0
Total length	2.178	0

SIX INCH PIPE.

Along west side of Main, from south side of Plum to north side of Cedar	417	0
Along north side of Park Avenue, from west side of Decatur to west side of Rosatti	959	0
Along south side of Olive Street, from east side of Fourteenth Street to a point about 230 feet west of Leffingwell Avenue	5,602	0
Along south side of Franklin Avenue, from a point about 100 feet west of Eighteenth Street to east side of Pratt Avenue	2,936	0
Total length	9 974	0

FOUR INCH PIPE.

Along north side of Carr Street, from west side of Fifteenth Street to east side of Seventeenth Street	820	0
Along west side of Twelfth Street, from south side of Olive, southwardly	78	6
Along west side of Sixth Street, from south side of Myrtle to north side of Spruce	236	0
Along west side of Sixth, from a point about 130 feet south of Spruce Street, southwardly	105	6
Along north side of Webster Street, from west side of Ninth Street, westwardly	167	6
Along south side of Morgan Street, from west side of Eighteenth Street, to east side of Twentieth Street	540	6
Along south side of Lucas Place, from west side of Seventeenth Street, westwardly	457	0
Along west side of Fifth Street, from south side of Biddle, Southwardly	210	0
Along north side of Hickory Street, from west side of Laveille to west side of St. Ange Avenue	874	0
Along east side of Leffingwell Avenue, from north side of Pine Street to South side of Locust Street	658	0
Along north side of Pine street, from a point about 150 feet west of Beaumont Street, westwardly	387	6
Along south side of Locust Street, from a point about 80 feet east of Beaumont Street to east side of Ewing Avenue	1,184	0
Along south side of Wash Street, from east side of Nineteenth Street, eastwardly	275	0
Along south side of Wash Street, from west side of Seventeenth Street, westwardly	144	0
Along north side of Carr Street, from east side of Nineteenth Street, westwardly	80	0
West side of Eighteenth Street, crossing Morgan	38	0
North side of Morgan Street, crossing Eighteenth	27	0
Total length	6,582	0

THREE INCH PIPE.

Along west side of Tenth Street, from north side of Brooklyn Street, northwardly	342	0
Along north side of Plum Street, from west side of Third Street, westwardly	201	6
Along north side of Lafayette Avenue, from west side of Seventh Street, westwardly	203	6
Along west side of Rosatti Street, from north side of Park Avenue to north side of Carrol Street	632	0
Along south side of Poplar, from west side of Fourteenth Street, westwardly, to Alley between Fifteenth and Sixteenth Streets	508	0
Along north side of Poplar Street, from west side of Thirteenth Street to west side of Fourteenth Street	896	0
Along east side of Fifteenth Street, from South side of Clark Avenue to south side of Poplar Street	730	0
Along north side of Spruce Street, from east side of Fifteenth Street, westwardly	213	0
Along south side of Belmont Street, from east side of Fifteenth Street, westwardly	190	0
Aleng north side of Chambers Street, from west side of Twelfth Street to east side of Thirteenth Street	328	6
Along south side of Madison Street, from west side of Twelfth Street to east side of Thirteenth Street	328	6
Along west side of Twelfth Street, from south side of Chambers Street to South side of Webster Street	300	0
Along south side of Hickory, from west side of Dillon Street to west side of Grattan Street	337	0
Along west side of Grattan Street, from south side of Hickory Street southwardly	192	0
Along east side of Thirteenth Street, from north side of Hickory, northwardly	490	0
Along north side of La Salle Street, from east side of Thirteenth Street, westwardly	281	0
Along west side of Laveille Street, from north side of Hickory Street, northwardly	140	0
Along south side of Gratiot Street, from east side of Ninth Street to east side of Barlow Street	407	0
Along west side of Jackson Street, from east side of Second Street, to south side of Soulard Street	2,060	0
Along east side of Nineteenth Street, from south side of Franklin Avenue to north side of Carr	792	0
South side of Chambers St., crossing Twelfth St	45	6
West " Twenty-fourth " Franklin Av	44	0
North " Soulard " Jackson St	36	0
South " Marion " Jackson St	36	0
North " Barry " Jackson St	36	0
North " Miller " Jackson St	26	0
Total length	9,415	6

LESS PIPE TAKEN UP, TO GIVE PLACE TO LARGER SIZE.

Six inch Pipe along west side of Fourteenth Street, from south side of Market Street to north side of Clark Avenue	851	0
Four inch Pipe along north side of Olive Street, from west side of Seventeenth St., westwardly	103	0
Total length taken up	954	0

RECAPITULATION.

Ten inch Pipe	2,178	0
Six inch Pipe	9,974	0
Four inch Pipe	6,726	0
Three inch Pipe	9,271	6
Total feet laid	28,149	6
Total feet taken up	954	0
Total feet added	27,195	6

Or 5 miles and 795 feet and 6 inches.

A. LARGUE, *Inspector*

OFFICERS OF THE ST. LOUIS GAS-LIGHT CO.,

For the year 1861.

DIRECTORS:

ASA WILGUS, JOHN D. COALTER,
OLIVER A HART, BENJAMIN STICKNEY,
CHARLES H. PECK, JAMES SMITH,
R. J. LOCKWOOD, JOHN TILDEN,
LOUIS A. LA BEAUME.

ASA WILGUS.....*President.*
EDWARD STAGG.....*Secretary.*
THOMAS PRATT.....*Engineer.*
ALEXANDER LARGUE.....*Inspector.*
CHARLES E. DUNN.....*Sup. Pub. Lamps.*

MACON, GEO.—Wood-gas works, built by Perdicaris & Hoy, and are quite satisfactory, having changed from rosin to wood, in 1857, not finding a supply of rosin. Use iron retorts, from Merrick & Sons, Philadelphia, and Code, Hopper & Gratz's meters. Gas-holder from Merrick & Sons, and Bunsen's Photometer. Total length of mains 9 miles, from 6 to 2 inches. Use pine wood, which is plenty on the spot; report gas to be 14 candles power; made over 7,000,000 feet gas last year.

NEW-BEDFORD, MASS.—John H. Towne, builder of gas-works, which are satisfactory. Use iron retorts from Lowell Machine Co. Station and wet customer meters from Code, Hopper & Gratz; dry meter from do., and Crowell, Hart & Co., London. Gas-holder from Thurston, Gardiner & Co., Providence, R. I.. Use photometer, but no exhauster; Pictou and Albert coal, costing $4 60 and $12 00 per ton, mixed as 95 to 5 per cent. Make about 12,000,000 cubic feet per annum. Charge no rent for meters. Owe nothing. Doing well.

MEDINA, N. Y.—Rosin gas-works, consisting of a stove and 2 round retorts, 4 feet long, 1 foot deep. Make 100 feet of gas per hour, 1,500 feet to barrel of rosin. Mr. Brent wanted something better, when he wrote us, and rosin-gas works builders might do well to enquire if he is suited.

EVANSVILLE, IND.—Builders of the gas-works, John Jeffrey & Co., iron retorts from S. S. Ashcraft; meters from Code, Hopper & Gratz. Gas-holders built by John Jeffrey & Co. Use no exhauster, but a photometer. Pittsburg coal, costing from 10 to 14 cents per bushel, delivered. This is a favorite stock with capitalists.

THE AMERICAN GAS-LIGHT JOURNAL is published on the 1st and 15th of every month and is specially devoted to

LIGHT, HEAT, WATER-SUPPLY, AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities and to improve the system of SEWERAGE, VENTILATION, and DRAINAGE everywhere.

Incidentally with these results, the business of all Gas and Steam Fitters and Plumbers; the erection of Gas-Works and Water-Works; the consumption of Coals, the manufacture and consumption of Coal-Oils, the manufacture of Gas-Pipe, Water-Pipe, Steam-Pipe, Gas Fixtures, Gas-Meters, Water-Meters, Retorts of iron and clay, and their varied apparatus; of Drain Pipes, Ventilating, Heating and Dredging Machines will be increased immeasurably.

THERE ARE 20,000 CITIES AND TOWNS IN THE UNITED STATES, CAPABLE OF SUPPORTING GAS WORKS, WHILE THERE ARE NOT 400 GAS-WORKS IN OPERATION IN THE WHOLE COUNTRY!!!

New works are now springing up, however, every week, and they will continue to increase rapidly hereafter.

Advertisers of Gas-Coals, Coal-Oil, Water, Steam, Sewerage and Ventilating apparatus, and of Iron and Brass manufactures, &c., will find the AMERICAN GAS-LIGHT JOURNAL the most desirable and efficient medium of any in the United States, going, as it does, direct to the parties interested in those subjects.

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☞ Remittances by mail to be addressed to the proprietor,

JOHN B. MURRAY,
ROOMS of the AMERICAN GAS-LIGHT JOURNAL,
Nos. 254 and 256 Canal street, NEW-YORK CITY.

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TRUBNER & Co., London.
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WHEATLEY, STARR & CO., 156 Cheapside, to whom all payments for our account must be made; and who will forward to us all packages, samples and orders, on payment of charges.

DOMESTIC.

The AMERICAN GAS-LIGHT JOURNAL can be purchased of all the newspaper and periodical dealers in the United States and Canada.

THE
AMERICAN GAS-LIGHT JOURNAL.

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

PROPRIETOR, JOHN B. MURRAY. } { EDITOR, C. ELTON BUCK.

FRIDAY, FEBRUARY 1, 1861.

In conducting any extensive manufacturing operation, particularly where chemical principles are involved, it is of the greatest importance to pay especial attention to residual products, the disposition of which is too often overlooked and treated as if of very little consequence. Although, of course, the main object in prosecuting a technical business is the production of certain saleable commodities, and the principal calculations of profit are based upon these, yet the manufacturer who anticipates even the ordinary run of success, will pay strict attention to the economical disposal of his residual products, and will give them a liberal share of attention. To no branch of technology do these remarks apply with more force than that of the manufacture of illuminating gas, the residues of which, after the primary object has been attained, amount to an important proportion of the saleable production, and demand close attention as to their disposal. Within the past few years science has done much to utilize and extend the employment of these residues, and the ingenuity of inventors has opened new fields for their application.

The most tangible residue of the manufacture of gas, as well as the one of the greatest pecuniary value is undoubtedly coke. Its uses are too familiar to need enlargement here, and its value as a fuel is highly appreciated. In extracting this substance from the retorts, coming in contact as it does with the free oxygen of the air, a portion of it is necessarily consumed, and thus a loss is met with at the outset. In cooling the incandescent coke, the sudden application of cold water causes a considerable disintegration of its structure, and a large proportion assumes the state of a coarse powder, which, detracting from the amount of the solid substance, causes a material waste. Efforts have been made to obviate both of these difficulties, and to present a plan whereby the coke may be extracted from the retorts in such a manner as to exclude the atmospheric air, and thus prevent this loss. Such a method has not yet been devised, and it seems to be a matter of some difficulty to contrive an arrangement to effect this desirable object.

The powder resulting from the disintegration of coke, has been proposed as an efficient absorbent for the salts of ammonia and its employment has been lauded in this way as a manure. Coke, it is well known, is an allotropic condition of carbon, which, when made from wood, is an excellent absorbent and deodorizer, having the faculty of concentrating within its pores ammoniacal and other gases, and has been employed to some extent in agriculture. These properties are not possessed to the same extent by coke made from coal, although they exist to a certain amount, and the application of this substance for fertilizing purposes as an adjunct to other manures, or rather as an absorbent as above mentioned, has not been sufficiently characterized by success to venture an opinion upon it.

The applications of coal tar are much more numerous than that of coke, the discoveries brought about by the aid of chemistry having opened a wide field for the utilization of this important residuum; and as the votaries of science are still indefatigable in their investigations, and are pursuing their experiments in this interesting domain of study with commendable vigor, the probabilities are that new applications will still be described, and the value of the product of the hydraulic main be established as of great importance. An uncertainty has existed in the minds of some gas-engineers as to the proper proportion of coal-tar which should result from the production of gas. Of course this amount varies greatly with the proportions of the different coals used; but this is well understood, the point of difference not being here, but in respect to the degree of heat used in effecting the carbonization—some contending that a comparatively low degree of heat although producing less gas, and a larger quantity of tar, is best adapted to the generation of the most valuable illuminator, and in a great measure prevents the deposition of bituminous matter after the gas has left the hydraulic main. On the other hand, a number of engineers advocate the theory of an increased temperature in the retorts, as tending to produce a greater quantity of gas, at the expense of the amount of the tarry residuum, and even at the risk of the deposition in the mains and pipes of matter condensed from the vaporization of the tar. Some gas companies are in the habit of mixing the tar with sawdust, and submitting it to a re-distillation, by which means the carbonization is rendered more perfect, and an additional quantum of gas is secured, resulting from the decomposition of the woody fibre of the sawdust. In gas-works situated near large lumbering establishments, where an unlimited supply of sawdust can be obtained, a treatment of the tar in this manner might tend towards a greater economy than if it were sold as a residual product in the usual manner.

The able papers from the pen of the distinguished chemist, M. E. KOPP, which have appeared in several of our recent numbers, of which we continue in this issue of the JOURNAL, exhibit the progress made in the department of organic chemistry, and illustrate the intimate connection existing between the theoretical and practical bearings of the science. The investigations as to the chemical nature of coal tar and of its many derivatives have not only afforded a mine of wealth wherewith to gratify the desires of the student, but have also opened to the practical technologist a long list of compounds whose preparation and use in the arts present an encouraging opportunity for various industrial pursuits.

A few years ago the uses of coal tar were very limited and consisted mostly in its application in a crude or partially modified condition, as a coarse paint for protecting wood and iron work, ships, &c., and after evaporation or a hasty distillation, the bituminous mass was also used, as it now is to some extent, in the fabrication of water-proof roofs, and as the principal material of asphalt pavements. It was also used in the manufacture of lamp-black, as it is still employed in some measure. As before remarked, the discoveries of modern chemistry have widely enlarged the sphere of operations in which coal tar is utilized, and its properties and combinations are receiving that degree of attention which the subject demands.

Practically speaking, coal-tar may be described as being composed of two fluids, the more volatile consisting chiefly of naphtha with a number of analagous compounds, and the other a mixture of substances technically known as "dead oil." In scientific nomenclature these designations are not recognized, but as we are mentioning them in respect to their practical value, and as the terms have been immemorially used, it is well enough to adopt them. These substances consist of a large number of compounds, and new bodies are being almost daily isolated from them, so that it may be said that the exact composition of coal-tar is not yet fully understood, and doubtless many new applications will yet be found for its employment. Among its most important derivatives are naphtha, benzole, paraffine, naphthaline, paranaphthaline, picamare, chrysene, pyrene, cymole, cumole, picric acid, and a great variety of other bodies, the mere mention of which would occupy a large space. In the papers of Mr. KOPP above referred to, a great variety of additional derivatives are enumerated, including the rare and costly dyes, aniline and fuschine, and their analagous compounds, and the great value possessed by these bodies is shown, although extracted from, comparatively speaking, so worthless a source. The perfumer as well as the dyer, is indebted to coal-tar for a valuable substitute for the oil of bitter almonds, the flavor and odor of which is exactly imitated by the chemist in the preparation of nitro-benzole, and large quantities of this compound are used in place of the genuine article. But were we to notice but a tithe of the valuable applications of the substances derived from coal-tar, we would far exceed our allotted space.

The ammoniacal liquor produced in gas-works, contains a compound capable of many useful applications, and if it can be concentrated, and employed in no other way, its value as a fertilizer is of great moment. In many parts of England and Scotland the gas companies dispose of their ammoniacal liquor to the farmers in their immediate vicinity, who highly prize it as a manure, and use it extensively as a stimulant to young grass, barley, and oats. Its normal strength is somewhat reduced by the addition of water, as the liquor used alone exerts a too violent stimulation for the healthy constitution of the growing plant. The attention which is paid to the utilization of ammonical gas-liquors, is not by any means so great as the importance of the subject deserves. In small country towns, situated at a distance from manufacturing chemical establishments, the most feasible if not the only use for it is in its application as a manure, but elsewhere, where facilities for concentrating it are abundant, it may be profitably converted into some of the merchantable salts of ammonia, and it is a matter of surprise that this fact is so little heeded. In England, where practical economy is better understood than in this country, several different plans are employed to manufacture the salts of ammonia from gas-liquor, and the success attending them proves that similar attempts might be advantageously introduced by some of our own gas companies.

The spent lime used in the purification of gas, is principally employed for fertilizing purposes, its original value being somewhat increased by the ammonia it absorbs from the gas which passes through it. Besides the ammonia, it also contains considerable quantities of sulphur in the form of

hydrosulphuret of calcium, but no feasible process has yet been employed for extracting this element, as is sometimes done where oxide of iron is used to effect its removal from the gas.

In our notice of the residual products of gas-works, we have only mentioned the principal ones —those which possess sufficient value to entitle them to a large share of consideration, and we trust their importance will be recognized. We have no doubt that a large saving may be accomplished by studiously regarding these residues, and new modes of their application will be suggested which will increase their saleable value. Such a consummation would be a boon both to companies and consumers, and would admit of a corresponding reduction in the price of gas, thus proving mutually beneficial.

THE PHOTOMETER.

It is a matter of surprise that so few gas-light companies use the photometer in their otherwise complete works. Although many of them, particularly in large cities, have provided themselves with photometers, and institute frequent tests of the relative value of the gas they manufacture, a large number have abstained from procuring this necessary apparatus, and do not possess the means of conclusively determining, either for their own satisfaction or for that of their customers, the quality of the gas produced. It is well known that the only means of arriving at the true value of artificial light is by comparative essays, by burning the substance whose illuminating power is to be tested, against a light assumed by universal consent, to be the standard. The standard generally used is a sperm candle, 6 to the pound, consuming at the rate of 120 grains per hour, and the light to be tested is said to possess the power of so many candles, according to the number of times its brilliancy exceeds that of the standard, or it is expressed in fractional parts of a candle when it is exceeded by the standard in diffusing light.

By the reports recently made to us, the number of gas works using the photometer apparatus is absolutely inconsiderable, and aside from their clearly defined duty to their consumers in being ready at all times to satisfy them as to the quality of the gas sold them, it would seem to be desirable that the companies should be themselves every day informed of the value of the gas they are producing, to enable them to ascertain the relative values of coals and their admixtures.

Gas is apt to vary in illuminating power, owing to a number of circumstances, and of course it is to the interest of the companies to know this, and to take the proper steps to remedy the deficiency, and always to maintain the proper quality. It is no less a matter of justice to consumers than to the companies themselves, to have at hand a ready means of exhibiting to the purchaser the quality of light for which he pays a uniform price whether good or bad, and of which he has no means of judging but by the mere dicta of the producer. But the right of the consumers to be satisfied of the quality of the gas supplied is unquestionable. It is not enough that a company is the only company supplying gas in a city, and the consumers must take that or go without any. There is a concurrent right on the part of the consumer to know that in sustaining a monopoly he is not injured thereby, and that while he pays an arbitrary price for light, he is fairly dealt by as to its quality.

Every gas company should have a photometer room arranged adjoining their office, so that during business hours any customer may come in and examine for himself the value of what he is buying. Purchasers of dry goods, flour, grain, beef and other commodities are entitled to this—why should not purchasers of gas be, also? We commend this subject to the attention of those interested. Gas companies that cannot afford to own a photometer should close their doors, and others, less parsimonious, would be found who could.

DEATH OF SAMUEL CLEGG.

By the arrival of the *Etna*, we are apprised of the death of SAMUEL CLEGG, which occurred on the 8th of January, at the residence of his son-in-law, near Hampstead, England.

Mr. CLEGG, whose name is indissolubly associated with the early history of gas-lighting, was born in Manchester, in 1781, and was, consequently, at the time of his death 79 years old. After pursuing his scientific studies under the superintendence of the eminent chemist DALTON, he was indentured as an apprentice to Messrs. BOULTON & WATT, at the Soho factory, where he became thoroughly educated in all the minutiæ of engineering. While here, MURDOCH, the founder of the system of gas-lighting, was pursuing his experiments for the application of coal gas as an illuminator, and CLEGG soon entered the same field of study, and eventually far exceeded his predecessor in the success which he achieved. The various steps of the improvements instituted by Mr. CLEGG in the manufacture and purification of gas, are fully detailed in the admirable work by his son; and although we cannot consider him the founder of gas-lighting, we can with safety say that he accomplished more towards perfecting and simplifying the manufacture of gas, than any other man. As the inventor of the gas-meter, he deserves the thanks of all who are interested in its registration, and many of the improved contrivances used in gas-works are due to his ingenuity.

Mr. CLEGG was identified with the construction of many of the important gas-works of London and other parts of Great Britain, but he temporarily abandoned this branch of his profession, and entered into an unsuccessful business connection. After this he accepted an appointment from the Portuguese government, and superintended the construction of the mint at Lisbon, and other public works. His last years were devoted to matters more immediately connected with his early profession of gas-engineering, and among other results of his labors were an improved dry meter, as well as several innovations in the construction of wet meters.

NOTICE.

Mr. V. HAROLD MYERS, No. 152 South Fourth Street, Philadelphia, is the sole agent of the AMERICAN GAS-LIGHT JOURNAL for the State of Pennsylvania.

Mr. MYERS has "opened the ball" since January 1st, with several desirable advertisements and subscribers, and we cordially recommend him to the enterprising manufacturers of that State, as our intelligent and energetic agent, through whose hands orders will reach us safely and be satisfactorily filled.

Our agents in London, England, are Messrs. TRUBNER & Co., 80 Paternoster Row, who are authorized to obtain subscriptions and advertisements for us. Single copies of the AMERICAN GAS-LIGHT JOURNAL will be always on sale at Messrs. TRUBNER & Co's. counter.

We want a first class active agent in Cincinnati, Ohio.

WATER-METERS.

The Legislature being now in session, we call upon them to direct the immediate application of meters, to arrest the waste of water in this city, and establish an equitable system of charge for its use. The present law taxes a house by its front width and its height; thus a five story house is charged more than one of four or three stories, whereas, it is a notorious fact that the water never reaches the third story of a house above 14th street, and on Murray Hill it rarely mounts to the second. This system of charge is, therefore, a fraud. If the gas philosophers of Albany will drop the consideration of the subtle fluid, and legislate upon the shameful and reckless waste of water, they will be drowned in the outpourings of the people's gratitude.

Notice to Chemists, Geologists, Mining, Civil, and Gas-Engineers, &c.

The editor of the AMERICAN GAS-LIGHT JOURNAL would respectfully solicit contributions from practical and scientific men throughout the country, relating to either of the specialties of the paper, and would particularly invite the coöperation of chemists, geologists, physicians, civil, mining, and gas-engineers, and all others who are interested in the progress of scientific knowledge. In order to enlarge the field of its usefulness, a copy of the JOURNAL will be gratuitously forwarded to every college within the limits of the United States for one year after the receipt of a letter indicating the name of the institution.

REPORTS OF GAS-LIGHT COMPANIES.

Our readers are referred to the interesting Report of the St. Louis, Mo., Gas-Light Company, on another page. We hope all the Companies will follow this example, and publish their proceedings for the general benefit. Publicity, of this honorable character, will never injure any business. *We will thank the various Gas-Companies to forward their last reports to us immediately.*

BUSINESS DEPARTMENT.

We desire to call the attention of Gas Light Companies to the advertisement of Messrs. JOHN J. GRIFFIN & Co., Gas-meter makers, on page 244 of this number. This establishment, although of comparatively recent date, has supplied several Companies to their entire satisfaction, and the manufacturers express their willingness to place their meters beside those of any other makers in this country,

Notice is given of a new partnership formed by Messrs. JOSEPH NASON and HENRY R. WORTHINGTON, under the firm of JOSEPH NASON & Co., for the construction and application of their improved Steam Heating Apparatus which is undoubtedly a superior affair. Mr. WORTHINGTON will continue on his own account, the manufacture of water meters and steam pumps, at his new place of business, No. 61 Beekman street.

Mr. FREDERICK A. SABBATON presents his card as Gas-Engineer, for the planning and construction of works, in which he has no superior.

The Philadelphia Fire-Brick Works are also advertised prominently in our columns.

Mr. THOMAS HOADLEY, of Cleveland, O., offers his Pyro-Clay Retorts, to Gas-works throughout the country. Several Gas-works certify to their excellent results.

Messrs. WARNER, MISKEY & MERRILL, of Philadelphia, advertise their stock of Gas-Fixtures, which they offer to the trade and to private parties on as favorable terms as are to be had at any other establishment.

Messrs. E. BAKER & SON, No. 24 Wharf, Harrow Road, London, advertise their Stourbridge Fire-Brick Works, to which the attention of our Gas Companies is requested when sending their orders for foreign goods of this description.

A VISIT TO MITCHELL, VANCE, & Co's. MANUFACTORY. On Saturday, January 26th, at the invitation of Messrs. MITCHELL, VANCE, & Co., we visited their extensive manufactory of gas fixtures in West Twenty-Fourth street.

The honors were done by Mr. C. TIERS MYERS, the junior partner, who conducted us throughout the entire establishment, exhibiting and explaining the various processes from the designing room to that where the goods are packed for shipment.

The exigencies of the times have compelled Messrs. MITCHELL, VANCE & Co., instead of reducing, to add to their already spacious premises, for which purpose they will shortly break ground and erect two additional buildings; the whole will comprise when finished, a small village in extent and population. Several large orders are already in hand, and others are promised on the return of Spring.

ACKNOWLEDGEMENT.—We are indebted to Messrs. Munn & Co. for the use of the engravings illustrating Lenoir's Gas Engine, for which courtesy we tender our respectful acknowledgements.

CORRESPONDENCE.

STREET PRESSURE IN PHILADELPHIA.

OFFICE PHILADELPHIA GAS WORKS, Jan. 15th, 1861.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

In reply to yours of 8th, I would say that our average street pressure is *two* inches, both for day and night, during the Winter months. In summer, the day pressure is reduced to *one and a-half* inches.

To ensure as nearly as possible an equal pressure to all parts of the city, we have placed recording pressure registers at many points, and valves upon supply-mains, all connected with the gas-holder stations by telegraph; and the supply is regulated by telegraphic signals from operators placed in charge of the gauges, at the times of general lighting up and extinguishing, so that the incidental variations depend upon the capacities of the local supply-mains between the points of distribution.

For the above purpose we employ over fifty miles of main wire, with twenty-one telegraphic instruments.

Very truly yours,

C. M. CRESSON.

THE WATER-WORKS OF BIRMINGHAM, CONN.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

We furnish 25 fire hydrants for the Borough, for which they pay $5 each per annum. Also 5 fire hydrants to other parties for which they pay from $10 to $30 per annum. At the highest point of the village the hydrants will throw water through a ¼ inch nozzle over the highest buildings. Our main crosses the Naugatuck river, in the bed and shores of which we have laid about 250 feet of 9 inch cast iron pipe, connected by flanges, squared up, packed with rubber packing ⅛ inch thick, and bolted at each joint with 8 five-eighth bolts. Eighteen, 9 feet length, were put together on staging above the water, and afterwards let down to the river bed; the connections at the end of this were made by drawing and pumping out the water. The reducing reservoir consists of a stone cistern 6×12 feet, and 6 feet deep and covered by a brick arch. The water is let into the cistern, and the flow regulated by a self-acting valve apparatus which is governed by a copper float. The valves (which are two) being closed by the float when the water rises to a certain height, and opened more or less as the water falls below such height. After considerable trouble, we have got this apparatus fixed so that it works in a very satisfactory manner.

Yours respectfully,

JOHN I. HOWE.

President Birmingham Water Company.

LIGHT AND WATER IN THE AZORES.

CONSULATE U. S., AT THE AZORES, FAYAL, 9th Nov. 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

Your favor of the 1st August was received through the Department of State, on the 7th inst., and I regret that I can impart no information that will add any value to your stock.

Wax, spermacetti, stearine, tallow, olive and fish oil, are the illuminating materials used in these Islands.

The acqueducts, as also the sewerage, are of the most simple kinds, and are unworthy of your notice.

I am anxiously waiting for the result of your very interesting investigations, as I am a great admirer of a good, cheap light.

With great consideration,

I am very truly yours,

CHARLES W. DABNEY.

FITCHBURG, MASS.—Coal-gas works, built by L. Benedict. Iron retorts, from Bristow & Endicott, meters from Samuel Down; gas-holders from Smith, of Salem. Length of mains, 5 miles, from 8 to 2 inches; Pictou coal used, costing $6 15 per 2,240 lbs. Company prospering in a moderate way.

GAS-WORKS AT PRAGUE, KINGDOM OF BOHEMIA.—Proprietors, Steffek & Friedland; capital, £100,000 or $500,000; semi-annual dividends, 10 per cent.; population of gas district, 180,000; private meters, 1,400. This is another instance of the company's meters not being stated, but only those owned by consumers. Price of gas per 1,000 cubic feet, 11s. or $2 75; public lamps, 1,400; price of gas to these, 5s. or $1 25. Purify with dry lime. Joints leaded.

SAUGERTIES, N. Y.—On Friday, December 28, the gas-works at this place were formally opened for business by a brilliant illumination of the town. The *Telegraph* says the company supply a first rate quality of gas, and the citizens are all quite satisfied with it at the start. On the evening in question, the stockholders, through a generous invitation extended to them by Messrs. George H. Kitchen & Co., of New York city, builders of the gas-works, assembled at the Phenix Hotel, and partook of a splendid supper prepared expressly for the occasion. The entertainment proved a pleasant, *bright* and happy one, and terminated with speeches, toasts, &c., to the fullest enjoyment of all in attendance. There were many light hearts present on the occasion, but at the close some heaviness was experienced by the self-imposed burthens of the guests.

PROGRESS OF THE WATER-GAS.—An exchange paper announces that the town of Aurora, Indiana, twenty-five miles from Cincinnati, has been illuminated with water-gas, and predicts it to be a great success, but no official data have been received at our rooms as to the results of the illumination. It has also been stated that the town of Camden, Mass., has been successfully lighted with water-gas, but we have received no reliable account of this experiment, and cannot, therefore, do more than to casually refer to it.

JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES FOR UPPER CANADA.—We take great pleasure in announcing the appearance of the first number of *The Journal of the Board of Arts and Manufactures for Upper Canada*, which is published monthly at Toronto. This new serial is, as its title indicates, devoted to the encouragement of arts and manufactures, and if the succeeding numbers contain the same quality of useful and instructive information as the copy now before us, we do not doubt it will have a large circulation and meet with a merited success.

GAS APPARATUS FOR CARS.—The New York Car and Steamboat Gas Company have lately signed a contract to attach their excellent apparatus to the cars of the Central Railroad, of Georgia. In the Union or out, gas-light must be had, and we do not find that the demand for it is at all diminished.

HARLEM, N. Y.—A suburban gas-works, near this city, built by Samuel R. Brick; iron retorts, from Merrick & Sons, Southwark Foundry, Philadelphia; meters from Samuel Down; gas-holders from Merrick & Sons; stock has risen from 80 to 115, and doing well.

HUNTINGTON, PA.—J. N. Bird & Co., of Trenton, N. J., built the gas-works; meters from Code, Hopper & Gratz; Westmoreland coal, at $3 per ton of 2,000 lbs.

Fig. 1

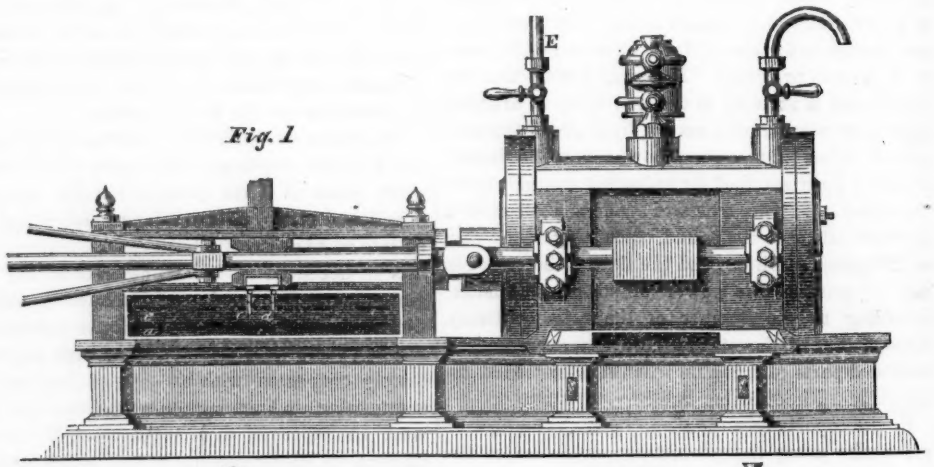


Fig. 2

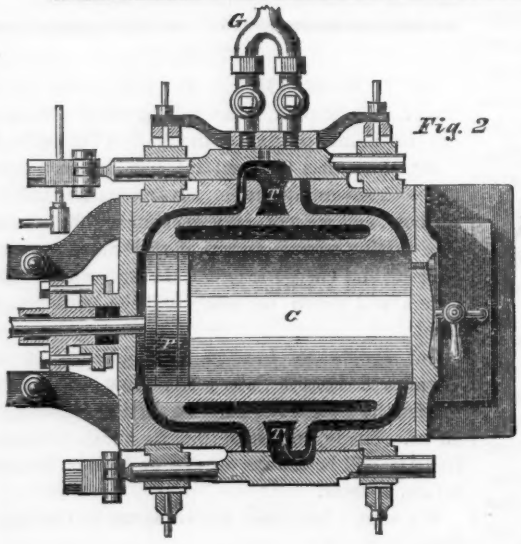
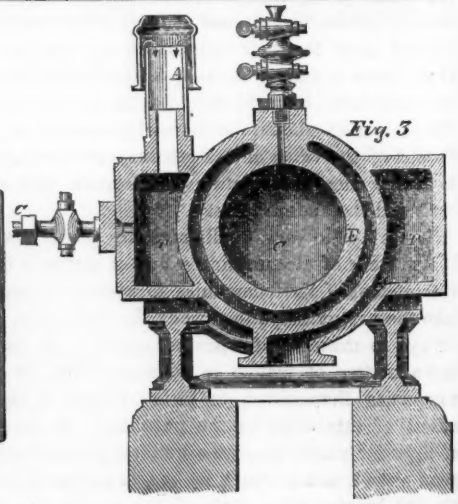


Fig. 3



THE LENOIR GAS-ENGINE.

Among the numerous applications of gas for useful purposes, is its employment as a motive agent, which has been attracting considerable attention for some time past, and M. Lenoir, of Paris, has devised an engine in which the motion is derived from the use of gas mingled with atmospheric air in such proportions as to form an explosive mixture, the expansion produced by the explosion being the power used to impel the machine. It is well known that if illuminating gas be mingled with eight volumes of atmospheric air, it forms a highly explosive mixture, and on being ignited, either by electricity or otherwise, will detonate violently.

The engine here represented is similar in most of its features to a common horizontal one, but it has no boiler, and, instead of steam, charges of gas mixed with air are admitted and ignited alternately behind the piston to give it a reciprocating motion by the expansion which results. Fig. 1 is a side elevation; Fig. 2 is a vertical longitudinal section, and Fig. 3 is a transverse section. C is the cylinder, and P the piston. The cylinder is double, leaving a space around it for a stream of water to keep the metal from becoming too highly heated by the frequent explosions. Two slide valves, T, T, are used, and *f f'* are the positive and negative wires of a galvanic circuit. The gas is admitted to the feed box of the valves by the pipe, C, and the air by the pipe, A. In the front part of the engine frame are iron rods, *e d*, with circuit breakers and closers on them. The ends of the wires, *f f'*, are of platinum, and pass into the cylinder, where they become highly heated when the current of electricity is sent through them. The galvanic circuit is broken and closed alternately for igniting the charges of gas behind the piston, by pins on the rods, *e d*, which are operated by a slide on the piston rod. The wires, *f f'*, are insulated from the cylinder where they pass through it by means of glass tubes.

ANSWERS TO CORRESPONDENTS.

S. C. of N. Y.—*Daniell's pyrometer is the only instrument for measuring the intensity of fire which possesses any real value. It is constructed of a metallic bar, generally iron or platinum, placed within a tube of well baked black lead ware. The metallic bar is shorter then the tube, and a short plug of earthenware is placed in the mouth of the tube above the bar, and so secured by a strap of platinum foil and a small wedge, that it slides with difficulty in the tube. By the expansion of the metallic bar, the plug of earthenware is pushed outwards, and remains in its new position after the contraction of metallic bar on cooling. An index is adapted to the instrument, which traverses a circular scale, before and after the earthenware plug has been moved outwards by the expansion of the metallic bar The degrees on the scale are convertible into those of Fahrenheit.*

Wedgwood's pyrometer was the first one invented, but its indications were extremely erroneous and it has been entirely supplanted by the instrument of Daniell.

J. B. S. of Ga.—*The opinion you hold in reference to the comparative production of noxious impurities by the consumption of gas and other illuminating substances, is entirely erroneous. The fact that many well informed men agree with you in this does not by any means prove you to be correct in your views. According to the experiments of Mr. Lewis Thompson, the author of the Chemistry of Gas lighting, the product of the consumption of gas, contains much less carbonic acid than that of the best wax, which is universally conceded to be the purest candle material. In the experiment referred to it was ascertained that 5 cubic feet, or 1,064 grains of gas gave as much light as 1,885 grains of wax, when every attention was paid to the trimming of the wick. The 1,885 grains of wax, according to the analysis, contained 1,474 grains of carbon, and must therefore have generated during combustion 5,404 grains of carbonic acid; whereas the gas contained only 767 grains of carbon and consequently generated only 2,812 grains of carbonic acid. Thus during the production of equal quantities of light by the combustion of the wax and of the coal gas, the air was contaminated with nearly twice as much carbonic acid by the wax as by the gas.*

G. N. K. of Mo.—*You have acted just as we should have done under the circumstances, and your conduct will be upheld by every reasonable man. It is well sometimes to take a firm stand, and to evince such a disposition as you have exhibited.*

A. E. of Pa.—*We cannot answer your inquiries unless you state your questions more explicitly. As your letter now reads, we think you have taken a wrong view of the whole matter, and we advise you to be careful how you proceed.*

J. D. J. of N. J.—*Oxygen gas was discovered in 1774 by Priestly, a celebrated English chemist, and not by Lavoisier as you incorrectly suppose Almost any elementary work on chemistry would have given you this information had you taken the trouble to look for it.*

A WALSH GAS-BURNER LIGHTING UP THE LEGISLATURE.—The Assembly of this State was brilliantly illuminated on one occasion last month by a new five-foot eight Walsh gas-burner, evidently an infringement of the old patent burner of that name, manufactured and sold by George Cottingham, as illustrated on page 155, Vol I. of this JOURNAL. The subject matter of this display was a bill introduced by one Honorable Mr. Walsh, in the following words:—"No gas company in the city of New York shall, after the passage of this act, be allowed to charge or receive pay for the use of gas-meters. All acts inconsistent with this act are hereby repealed."

On reference to our mailing books we could not find the name of the Hon. gentleman therein, which accounts for this brilliant flash of the legislative originality, and we have consequently presented him with the Dec. 1 number of the JOURNAL wherein on page 170 he finds himself anticipated by the three New York gas companies, who then and there gave notice that on and after Feb. 1, no rent would be charged for the use of meters.

We recommend Mr. Cottingham to look sharp after this infringement of his valuable burner, and we would also affectionally advise Mr. Walsh to subscribe to the AMERICAN GAS-LIGHT JOURNAL from its commmencement, (terms $3 per annum, *strictly in advance*,) to save him from any more wasteful hits at legislation. We must do the gentleman the justice to add in view of there being no rent charged for meters, he promises not to press his bill.

Seriously, to what unprofitable expedients do legislators who crave popularity with injured gas consumers, resort, to secure the *vox populi*, that hurrahs for them to-day and votes against them to-morrow. Gas consumers *who pay their bills* do not need such advocates. In the words of a correspondent, we can only hope that "the day is not far distant when the institutions that are to society a compact and an honor, that place the State of New York and city of New York so far beyond all others, will be objects not of suspicion, defamation, and oppression, but of encouraging legislation." Amen.

THE WATER-WORKS OF AMERICA.

TROY, N. Y.

The last annual report of the Water Commissioners of Troy, N. Y., is before us, being for the fiscal year ending March 5, 1860.

The active management of the works has been continued, as for several years past, under Edwin H. Chapin, Superintendent, and Alexander McCall, Clerk; the former in charge of the mechanical and labor department, and the latter in charge of the books and accounts, water rents and finances.

INCOME OF THE WATER-WORKS FOR THE YEAR 1859.

The amount of water rents for the year commencing May 1, 1859, assessed on premises situated on lots on streets in which the distributing pipes are laid, in books required by law to be prepared by the Commissioners and thence transferred to the tax rolls in the Chamberlain's office as a part of the annual tax on such premises, was:

From the three districts	17,962 88	
From special rates; sprinkling streets with small hose; masons' use, erecting buildings; jobbing, and pipe sold, &c	5,807 97	23,770 85

EXPENDITURES FOR THE YEAR 1859.

Interest on Water-Works' Debt	4,510 69	
Iron pipe	2,207 80	
Land for new Reservoir	2 566 77	
Construction	3,369 32	
Salaries, lumber, stop-cocks, hardware, printing, advertising, &c., &c	8,270 16	20,924 74
Nett earnings for the year 1859		2,846 11

The expenditures are divided, properly, thus:

For interest, salaries, labor, materials, &c., including all ordinary expenses of maintaining the works	12,141 31	
For construction	8,783 43	$20,924 74

COMPARATIVE STATEMENT.

The Water-Works have been under the charge of the present Commissioners five years, during which the receipts and expenditures have been as follows:

RECEIPTS.

	Assessed rents payable to the Chamberlain.	Paid to Chamberlain by the Clerk.	Total Receipts.	
1855	15.324 60	5,520 94	20,845 54	
1856	16.005 57	5,169 16	21,174 73	
1857	16,898 47	5,043 19	21,941 66	
1858	17,131 11	4,770 66	21,901 77	
1859	17,962 88	5,807 97	23,770 85	109,634 55

EXPENSES.

	Interest and ordinary expenses.	Construction.	Total Expenditures.	
1855	12,511 38	.....	12 511 38	
1856	12,124 59	8,868 69	20,993 28	
1857	11,978 86	11,855 08	23,833 94	
1858	10,857 36	11,484 69	22,342 32	
1859	12,141 31	8,783 43	20,924 74	100,605 66

Balance of 5 years' earnings in Chamberlain's office, unexpended $9,028 89

	Special Rates on Schools Churches, &c	Street Sprinkling.	Mason Uses.	Job Work.	Penalties.	Rent of Tenant Houses.	Total.
1855	352 75	308 00	504 45	4,355 74	....	....	5,520 94
1856	284 75	437 79	296 78	4,149 84	....	....	5,169 16
1857	329 81	526 95	202 17	3,934 26	50.00	....	5,043 19
1858	341 31	759 50	251 12	3,393 73	....	25.00	4,770 66
1859	334 50	695 50	322 63	4,382 84	10.00	62.50	5,807 97

The sums received in the office by the Clerk, from the different sources above named, vary, of course, every year—being some years more and some less. But the *annual water rents* placed on the tax rolls, and payable to the Chamberlain, have increased each year, and the sum of these for the year 1859 over the sum for 1855, is $2,638 28.

This increase arises partly from new buildings and new uses, where the pipes were previously laid; but mostly from the extension of street mains in '56, '57, '58, and '59—in all amounting to nearly *two miles*. The sum expended for construction during these four years is $40,991 89.

DAM FOR NEW RESERVOIR.

The following, by WILLIAM BARTON, Esq., engineer of the work, is a description of the dam, and also an account of the water passing down the stream in October:

This new storing reservoir is situated about fifty rods east of Oakwood Avenue, on the Piscawen creek, upon lands purchased of Titus Eddy, Gary Brothers, and Robert P. Winne, embracing by the present purchase about eleven acres of land.

The reservoir, when complete and filled to top water line, will contain about *thirty-seven million gallons of water*, and flow about six and a half acres of land.

The site for the embankment forming the dam, is at a place where nature seems to have supported a similar structure in by-gone days; the sides and bottom of the ravine being formed of slate rock, whose projections were at a closer proximity here than any other, and requiring but little effort of art to make a thorough and substantial dam.

At this point the rock sections, consisting of alternate strata of indurated clay-shale and compact lime-stone, exhibit some very remarkable and highly interesting examples of contortions and flexures—proving most conclusively that at some period, after the deposition and formation of the rock, it had been subjected to intense lateral pressure, whereby the strata have been bent and corrugated at sharp angles, and in some instances completely reversed, so that what were originally the surface beds are now the undermost. The most curious portions of this disturbed strata are now concealed from inspection by the earth-work of the dam, but at a point on the north bank a little below the dam, a section still remains exposed, which will well repay a visit and examination.

The embankment formed at the dam will be about one hundred and sixty-five feet wide at the bottom, in the deepest part of the ravine, twenty feet wide at top, about thirty-five feet long on bottom and two hundred and seventy feet long on top. The slope of the embankment on the inside will be two horizontal to one vertical; the outside slope, one and one-half horizontal to one vertical, and the embankment carried up to a point about five feet above the top water line. The deepest part of the embankment will be forty-nine feet, and the greatest depth of water thirty-four feet, which will be at the entrance to the pipes.

There are three cast-iron pipes laid from the foot of the inner slope, and extending under said embankment about 140 feet, entering a pipe chamber which has been constructed under the outer slope to receive the water passing through the pipes. This chamber is built of stone masonry, arched with brick; being eight feet wide, sixteen feet long, and about nine feet high. The bottom of the chamber is about two feet below the outlet, leaving always two feet of water into which the water from the stop-cocks is discharged, thence passing out into the creek below the dam. The pipes are two twelve inch and one eight inch in diameter, and provided with suitable stop-cocks at the inner side of the pipe chamber, so as to control the discharge. These can at all times be approached by a door from near the foot of the western, or outer slope, and upon a flooring constructed over the waterway, to the back part of the chamber. The pipes have been laid with great care, upon a bench or shelf cut into the rock on the north side of the ravine, bedded on about one foot of puddled earth, and well covered with the same material. At a point about fifty-three feet westerly from the upper end of the pipes, a cast-iron flange of about three and a half feet wide, was placed on each pipe and well leaded on, so as to more effectually prevent the water from following the outer surface of the pipe under the embankment. The pipes are laid nearly on a straight line, their upper ends only inclining a little to the south. The foot of the western, or outer slope, is shortened and sustained by a wall of stone masonry resting upon rock; the wall is about eleven feet high, four and a half feet thick, and about thirty-six feet long at top. Through this wall is the entrance to the pipe chamber, well protected from the frost by a set of double doors, one near the outer side and one upon the inner side of the wall, leaving a space of about three feet between the doors.

The inner surface of the dam will be lined with two feet of good gravel, and faced with a slope or revetment wall, about one and one-half feet thick; the foot of the wall resting in a trench cut in the solid rock to receive the same. The dam or embankment is made of material obtained from within the flow line of the reservoir, and is composed of clay, gravel and loam, being the best material to retain water, and make a tight dam. At about the centre of the embankment, a puddle wall has been begun, and will be completed as follows: a trench has been excavated in the slate rock, forming the bottom and sides of the ravine, fifteen feet wide and six feet deep, which is filled with material selected for the purpose, being one part good gravel to two parts good clay, laid in courses of six inches, then wet properly with

water, and cut with shovels so as to thoroughly mix the material and form a water-tight wall, which will be continued through the whole length and height of the dam, to a point three feet above the flow line; the base of said wall being fifteen feet wide for the first twelve feet in height; then thirteen feet wide for the next ten feet; then eleven feet wide for the next ten feet; then eight feet wide to a point about three feet above the flow line A further precaution was taken to prevent the water from passing between the rock forming the bottom and sides of the ravine and the embankment: Three trenches were excavated in the rock, each four feet wide and three feet deep: one located ten feet east of main puddle wall, one eighteen feet west of main puddle wall, and another thirty-six feet west of main puddle wall. These trenches were filled with material same as main puddle wall, and extended up into the common embankments about five feet throughout the bottom and sides of the ravine.

A good and sufficient waste wier will be formed by an excavation in rock, about fifty feet south of the main dam, entirely disconnected therewith. The surplus water passing over this will enter the stream again about two hundred feet below the dam.

QUANTITY OF WATER.

During the first week in October a good opportunity was afforded by the passage of the water through a trough, to ascertain the quantity used at this time. A series of measurements were made by running the water into a box, constructed for the purpose, which would contain fifty-six cubic feet; the time required for filling the same being carefully noted, gave actual measure; the result being found to be 1,463,946 Winchester gallons passing in twenty-four hours down the stream into the distributing reservoir; thence into the pipes for the supply of the city.

COST OF THE WATER-WORKS.

The entire cost to March, 1859. was	207,208 46
Add for construction this year	8,783 43
Total cost of construction to March, 1860	2$15,991 89

WATER-WORKS DEBT.

There was due on this debt, at the commencement of the fiscal year, in March, 1859	90,000 00
Paid on the debt, in 1859	9,000 00
Due March, 1860	$81,000 00
The Commissioners of the Sinking Fund hold, of bonds issued for the water-works, $4,000 due in 1872, and $5 000 due in 1875, bought up some years since with money raised yearly for a sinking fund. These bonds, which have been reckoned in the *annual accounts as part of the debt, with themselves as an offset to pay it*, have been cancelled during the year, thus reducing the actual debt, as above stated, to	81,000 00
There is due on this debt, May 1, 1860	10,000 00
Which, with funds already provided for the purpose, will be paid, leaving the debt then	$71,000 00

HYDRANTS.

There are two kinds of hydrants in use in the city—one, the old style friction draught-cock hydrant, introduced with the water-works in 1833–4, and very generally used in the city; the other, Bartholomew's patent hydrant, which works with a *valve*, instead of a friction draught-cock. A dozen of these, as an experiment, was taken by the office in 1855, since which time the number has been increased each year, and there are now in use about two hundred of them. They have several advantages over the old style: They cost less; allow *no leakage or waste of water;* with good usage require little or no repairs for years; but are as liable to freeze as the other kind, and perhaps not any more so, and, when understood, are just as easily thawed when frozen. The office keeps on hand for sale, both kinds, and those who need hydrants will take their choice.

WASTE OF WATER.

It is not easy to estimate the quantity of water wasted every year, arising from *wantonly* or *carelessly* allowing the hydrants to run when not necessary; from leakage under ground, of old and partially worn-out hydrants, neglected to be repaired and kept in order, as the By-Laws require. The leakage and consequent waste are almost entirely, if not wholly, from the old style hydrants, and not likely to be known or checked till the water shows itself above ground in the yard, or makes its way into the cellar or basement of the owner, or of a neighbor. But the most inexcusable waste is that which comes from purposely or carelessly, by some takers, leaving the hydrants open, and allowing the water to run.

During the year, one full penalty of $10 was enforced and collected from one person so offending; some others were let off by paying part of a full penalty, and some were punished by having their water for a time shut off. The employees of the office are directed to enforce rigidly the By-Laws and Ordinance against this abuse and misuse of the common property of the city. While it is expected and desired that the water be used freely for all needful and useful purposes, it is expected likewise that it be used with due economy, and a due regard to the rights of the prudent and careful takers.

WATER METERS.

The subject of adopting water-meters has been discussed in Troy, and the probability is that, in view of the waste of water, they will be adopted. They have Worthington's on trial at present.

It has been suggested, and very sensibly, that instead of expending large sums in building a new reservoir for the storage of water, it would be more judicious and beneficial to invest a tithe of the amount in purchasing meters to save it. The actual daily consumption of Troy is estimated at one and a-half million of gallons, while the daily waste is computed to be *three million gallons, or twice the quantity used for legitimate purposes!* What a commentary upon the annual increase of construction account in municipal water-works!

VALUE OF THE HYDRANT WATER.

The dependence of the citizens, in the parts of the city where the pipes are laid, upon hydrant water for household and culinary purposes, is almost universal, and its value in these respects is incalculable. This use, of itself alone, is more than ample compensation for the cost of the works. But when, in addition, is taken into the account its use in furnaces, machine shops and printing offices, for driving the large number of steam engines in the city; its use for other manufacturing purposes and in breweries and laundries; its use by masons in erecting buildings; its use for sprinkling the streets, and especially its use by the fire department for extinguishing fires and saving property, to say nothing of its use in promoting the general health and cleanliness of the city—we cannot adequately estimate the value of the water-works; while, from the fact that the cost of the works is comparatively low, the price of water for all these uses is remarkably cheap.

THE CASH SYSTEM.

By reference to the By-Laws, it will be seen that all labor and materials furnished by the office must be paid for at the time, and in default, the water is to be withheld from the person neglecting thus to do, until he pays his bill, together with the expense of shutting off and letting on the water. The good effects of this By-Law are seen in the facts, that no bad debts are made; that nothing is lost; that the payments are made with commendable promptness, and that no suits are, or need be commenced in order to collect the bills due the office.

The Water Commissioners are T. Symonds, Liberty Gilbert, Harvey Smith, J. M. Warren, Wm. F. Sage.

LIGHTING SHIPS WITH GAS.—The London *Times* says that one of Major Fitzmaurice's gas apparatus has been erected in the steam-factory at Woolwich Dockyard, by order of the Board of Admiralty, and has been put into operation experimentally for the purpose of testing its availability for supplying the ships of Her Majesty's fleet and the service generally with gas, in which case one of the apparatus will be fitted in the engine-room of each vessel, to supply the burners fixed in the various compartments of the ship in a similar manner to that on shore. The gas is termed "olefiant" gas, being made from any kind of oil, grease, bones, cocoanut, fat of every description, or even shavings, peat, wood, &c., and the apparatus may be managed with perfect safety by a mere lad, so extremely simple are its arrangements. The lights were pronounced of a greater brilliancy than the common gas-lights, being at the same time free from smoke, and the flame was observed to be of a thicker and stronger quality, although the heat produced was considerably less. The gas will continue in use for a short time in the factory, experimentally, in order to obtain a correct testimony of its superiority, for their Lordships' approval. The Birkenhead Commissioners are also trying the experiment of lighting the cabins of their river steamers with gas, a quantity of which will be carried on board each steamer daily.

FISHKILL, N. Y.—Rosin-gas works, built by Providence Steam and Gas Pipe Company, under the superintendence of James E. Van Steenbergh, Esq., cashier of the Fishkill Bank, actuated solely by a public spirited desire to benefit the town by this improvement. Meters from Code, Hopper & Gratz. About 2 miles of mains laid, gradually increasing and extending to the residences of the citizens.

GAS EXPLOSION AT ST. MARY'S CHURCH, OXFORD.—We learn from the London *Builder* that an explosion recently occurred at St. Mary's church, which resulted in the building being damaged to a very serious extent. The vice-chancellor's and proctor's seats were blown to some distance, almost to splinters, while some of the seats of the heads of the houses were nearly demolished, and those of the ladies were much injured. So great was the explosion that thirteen windows were greatly damaged, some having been entirely destroyed and others partially so. The large window over the Western entrance had even the lead surrounding the stonework forced from it. It was at first supposed this accident was caused by the explosion of the hot water heating apparatus, but a report by Mr. Siemens, of London, attributes it to the gas escaping from a broken main, and which was ignited by a workman throwing down a lighted match.

GAS EXPLOSION IN NEW HAVEN, CONN.—While some workmen were digging around a gas pipe for the purpose of finding a leak, in New Haven, Conn., a few days ago, one of the men struck a stone with his pick, which produced a spark, igniting the gas, and causing a tremendous explosion, which scattered the earth in all directions, but, very fortunately, no one was injured.

GAS A PACIFICATOR.—A correspondent suggests that Major Anderson be advised to throw a red hot shot into the gas-holders at Charleston, S. C., in order to put a stop to the present turbulent condition of that town. There is no doubt that such a prescription would act as a quietus upon all within reach of its influence; but we are not yet prepared to consent to its being administered to our countrymen in South Carolina, however harshly they are treating us—really their good friends.

PATENTS.

Inventors are informed that Patents are procured at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, through F. C. TREADWELL, Jr., Esq., an experienced Patent Agent and Expert, in the United States, and in all other countries where Patent Laws are in force.

UNITED STATES.

4.—J. M. Connel, of Newark, Ohio, for an Improvement in Water Elevators:

I claim the arrangement of means for actuating the spout, M, which is hinged to the curb, as set forth, for operating the valve, P, and controlling the quantity and the flow of water in connection with the aperture board, J, as and for the purposes described.

8.—C. H. Dolbeare, of Boston, Mass., for an Improvement in Lamps:

I claim, in a burner of the kind as specified, the application or arrangement of a filling tube, D, so as to pass down through the cap, a, substantially in manner, and for the purpose as set forth.

20.—Henry Leibert, of Norristown, Pa., for an Improvement in Lamps:

I claim forming an adjustable cap for lamps of a single flat piece of metal having projections, e, f, and b, and recesses of the shape and arrangement described, the said piece of metal being bent as specified, so as to form the body of the cap and so that the two projections, e, e, shall form a spring clip for grasping the tube of the lamp in the manner set forth.

41.—Stephen R. Weeden, of Providence, R. I, for an Improvement in Lamp and Candle Wicks:

I claim the wick composed of a single strand enchained in a series of single loops as described.

45.—C. A. Wortendyke, of Godwinville, N. J., for an Improvement in Candle Wicks:

I claim the wick produced by the system of spinning and twisting specified.

51.—F. G. Johnson, of Brooklyn, N. Y., assignors to himself, W. T. Milliken, of Morrisania, N. Y., and E. Jones, of New York City, for an Improvement in Water Meters:

I claim the alternate combination of the several (two or more) sections, 1 2 3, of the water passages with the several (two or more) intervening blade wheels, 1″ 2″ 3″, substantially in the manner and for the purpose set forth.

96.—James Adams, of New York City, for an Improvement in Hydrometers:

I claim the construction of a hydrometer or other instrument for ascertaining the specific gravity of liquids, substantially as described, by combining with its bulb and lower part, made of hard vulcanized india-rubber or gutta-percha, a graduated upper stem made of metal.

99.—Ambrose E. Barnard, of Paterson, N. J., for an Improved Hose Coupling:

I claim, first, The india-rubber ring, C, made in the manner described, which constitutes an automatic or self-acting washer.

Second, in combination with the same, the butt, A, cap, B, spring catches, D D, and clamp ring E, arranged and operated as set forth and for the purpose described.

107.—T. B. De Forest, of Birmingham, Ct., for an Improved Instrument for Cleaning Lamp Chimneys:

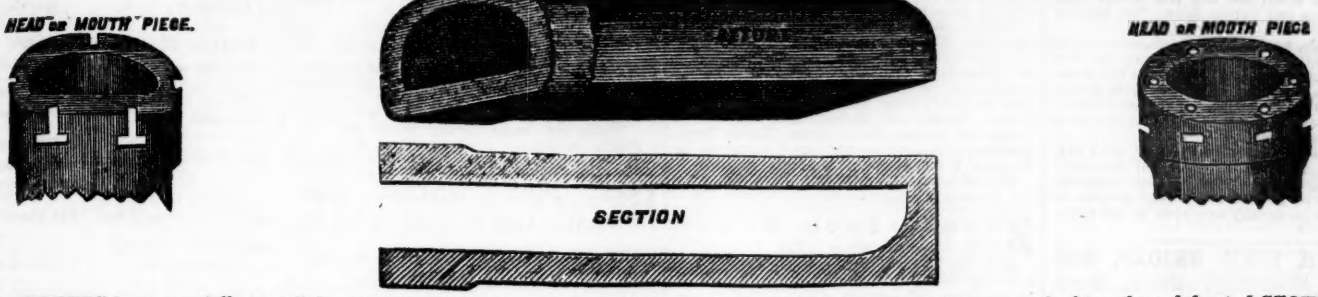
I claim a wiping instrument for lamp chimneys, formed by the combination with a laterally expanding frame of a removable fibrous envelope, operating substantially as set forth.

135.—William Braidwood, of Mount Vernon, N. Y., and James Whiting, of Brooklyn, N. Y., assignors to Thos. Holmes, of said Brooklyn, for an improvement in Operating Slide Valves of Engines and Pumps:

We claim the combination of the direct acting levers, *f* or *f'*, with the slide valve, h or h', the parts being constructed as specified, so that the valve covers the openings through which the levers pass, and renders separate packings or stuffing boxes unnecessary, as set forth.

KING BROTHERS,

STOURBRIDGE, ENGLAND, FIRE-BRICK AND RETORT WORKS.



KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for Burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning thus rendering them

FREE FROM CRACKS AND CORRECT IN FORM.

By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize

RETORT OVENS, FIRE-BRICKS, GUARDS, SADDLES, RABBITTED BURS, FLUES, AND QUARRIES, ARE ALL MANUFACTURED OF THE SAME QUALITY OF CLAY.

EVERY RETORT AND BRICK IS BRANDED "KING BROTHERS, STOURBRIDGE."

HARRIS & PEARSON,

PROPRIETORS OF

BEST GLASS-HOUSE POT, AND CRUCIBLE CLAY.

Manufacturers of Fire-Bricks, Gas-Retorts, and Glass-House Furnace-Bricks of every description.

AMBLECOTE FIRE-CLAY AND BRICK WORKS, STOURBRIDGE, ENGLAND.

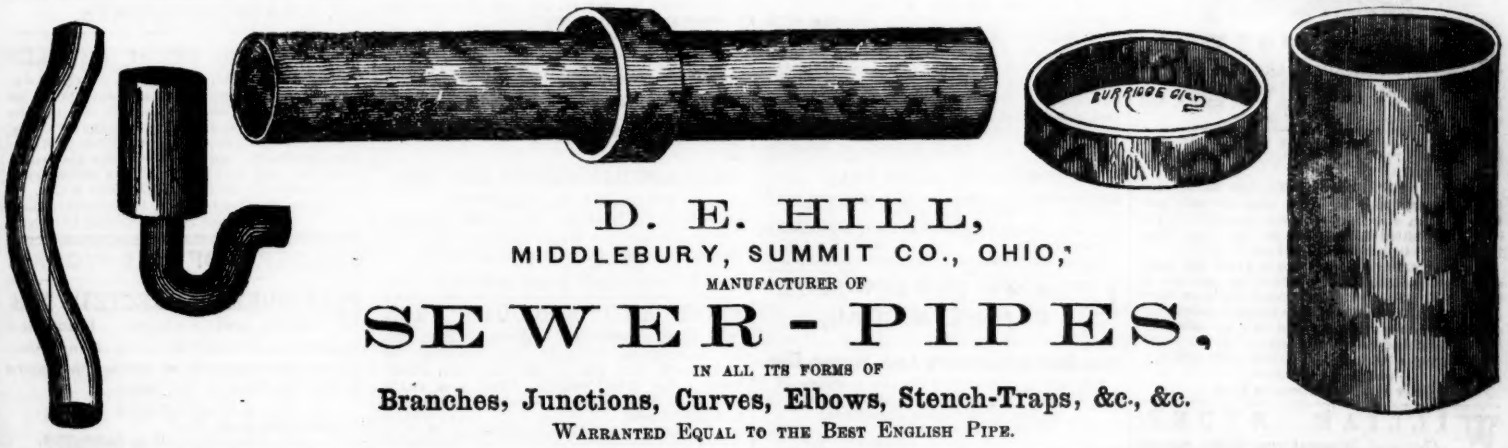
CODE, HOPPER & GRATZ,

1500, 1502 and 1504 FILBERT-St., PHILADELPHIA.

MANUFACTURERS OF

Pressure Registers, Pressure Indicators, Pressure Gauges, Photometers, Governors, Station Meters, Customer Meters, (Wet and Dry,) Experimental Meters, (Wet and Dry,) Show Meters, (Wet and Dry,) Meter Provers, Centre Seals, &c.

The high reputation which we have enjoyed for more than twenty-two years, and the fact that we have manufactured a greater number of Gas-Meters than all other manufacturers in this country combined, must present itself as a security to parties desirous of securing the most reliable instruments. Having completed a most extensive addition to our Factory, and added many important improvements to our machinery, we are enabled to fill orders entrusted to us with dispatch, and in all cases *Guarantee Entire satisfaction.* Our Patent Rotary-Valve Dry Gas-Meter is now used by upwards of Two Hundred Gas Companies, giving general satisfaction; we therefore recommend it, believing itsuperior to any other Dry Gas-Meter manufactured. All Meters tested separately by a sworn Meter-Inspector, and sealed when desired.



D. E. HILL,

MIDDLEBURY, SUMMIT CO., OHIO,

MANUFACTURER OF

SEWER-PIPES,

IN ALL ITS FORMS OF

Branches, Junctions, Curves, Elbows, Stench-Traps, &c., &c.

WARRANTED EQUAL TO THE BEST ENGLISH PIPE.

THE

STERLING GAS-REGULATOR

Improves the Light, and Saves a Large per centage of Gas.

MANUFACTURED BY THE

WHEELER & WILSON SEWING-MACHINE COMPANY.

It is well known that Printers require the best and most brilliant light. In proof of the superiority of these Machines over all others, the following New York establishments are using them, and testify to their excellence:—New-York Times, New-York Herald, New-York World, New-York Tribune, New-York Sun, Journal of Commerce, Courier & Enquirer, Evening Post, The Zeitung, Dispatch, Leader, Scientific American, Advertiser and Spectator, Independent, Daily News, Harper's Monthly and Weekly, Transcript, Mercury, Atlas, Life Illustrated, Albion, Spirit of the Times, AMERICAN GAS-LIGHT JOURNAL, Christian Enquirer, Churchman, Church Journal, Christian Advocate, Christian Ambassador, Christian Intelligencer, Observer, Sunday Times, Sunday Courier.

By order of the New York and Brooklyn Common Councils, these Regulators are now used in the City Halls, Police Stations, Markets, and other Public Buildings in both cities.

They are Warranted by the

WHEELER & WILSON SEWING-MACHINE CO.,

505 BROADWAY, NEW-YORK,

To keep in order, and always maintain the pressure of the Gas at the lowest point for a brilliant light, and economical combustion. They are so constructed that *under no circumstances can the Mercury get into the Meters, or in any way injure them.*

KIDDER'S

GAS-REGULATOR!!!

25 PER CENT. SAVED.

CERTIFIED BY SCIENTIFIC MEN TO BE THE

ONLY RELIABLE GAS-REGULATOR.

The undersigned Sole Agent for the sale of this valuable REGULATOR, is prepared to supply the Trade upon very favorable terms.

Agents Wanted in the Principal Cities and Towns throughout the United States and the British Possessions in North America.

As a Regulator and Economizer of Gas, it has received the highest testimonials. See advertisement in AMERICAN GAS-LIGHT JOURNAL, Vol. 2, No. 20, page 128.

HORATIO EAGLE, 126 Maiden Lane,

Between Pearl and Water streets.

CLAY RETORTS.

CLAY RETORTS.—J. K. BRICK & Co.—Brooklyn Clay Retort and Fire-Brick Works, Van Dyke, near Van Brunt street, Brooklyn, N. Y.—Manufacturers of Clay Retorts, Fire Brick, Gas and Hot House Tiles, Arch, Furnace and Cupola Brick, Fire Cement, Mortar, &c.

J. K. B. & Co. would invite the attention of Gas Companies to the important fact, that the Clay Retorts manufactured at their Works can be set without Tiles, requiring to be supported only at the front and rear ends, thereby exposing the entire surface of the Retort to the direct action of the flame from the furnace.

The results of this mode of setting, are a Saving of Fuel, Tiles, Transportation of Materials, Labor and Space, thereby enabling Gas Companies to set Retorts of at least 50 per cent. greater capacity than those usually employed in the ordinary arches.

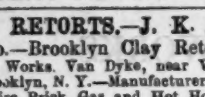
ENGLISH FIRE BRICKS, Rufford's Stourbridge Bricks, Stourbridge and Welsh Clay.
S. THOMPSON'S Neph., IMP'R,
45 Gold-st.

ELLIMAN BROTHERS, 217 Pearl-St., New York, Commission Merchants, Importers of
BELGIAN FIRE-CLAY GAS RETORTS,
Dealers in Tiles, Arch-Bricks, Furnace-Doors, MOUTH-PIECES, COVERS,
and all other Fittings, of the most approved patterns, for setting Clay Retorts.
SABBATON'S PATENT FURNACE-DOORS, & FRAMES,
Floyd's Patent Malleable Iron Retort Covers,
MCKENZIE'S PATENT GAS-EXHAUSTERS,
made by Addison Smith. Compensator-Valves, &c.
Gas, Water, and Steam Tubes

GAUTIER'S CLAY RETORTS.— Fire and Arch Bricks, Gas-House Tiles, &c. Black Lead Crucibles for Steel Works and Brass Founders.
MANY, BALDWIN & MANY, 49 John-st., N. Y.

PHILADELPHIA FIRE-BRICK Works, corner of Vine and Twenty-third streets, Philadelphia.
JOHN NEWKUMET,
Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice.

PATENT PYRO-CLAY GAS REtorts. THOMAS HOADLEY, Patentee, wishes to call the attention of Gas-engineers to these
RETORTS,
as a very superior article.
REFERENCES:—Gas-Light Works, Buffalo, N. Y.
" " Cleveland, O.
" " Chicago, Ill.
THOS. HOADLEY
Corner of Main and Mulberry Sts., Cleveland, O.



ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE, ENGLAND,
Manufacturer of CLAY RETORTS, FIRE BRICKS, and every description of FIRE CLAY GOODS.

COWEN'S PATENT FIRE-CLAY Retorts.
JOSEPH COWEN & Co., Blaydon Burn, near Newcastle-on-Tyne, England, were the only parties to whom a Prize Medal was awarded at the Great Exhibition in London, of 1851, for "GAS RETORTS AND OTHER OBJECTS IN FIRE CLAY."
J. C. & Co. have been for many years the most extensive manufacturers of Fire Clay Retorts in the United Kingdom; and orders for FIRE CLAY RETORTS of all shapes and dimensions, FIRE BRICKS, and every other article in Fire Clay, are promptly executed at their works as above.
COWEN'S GARESFIELD COAL AND COKE.
Coal and Coke office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

WILLIAM RYDER, General Mineral and Metal Agent and Merchant, 4 Dean street, NEWCASTLE-ON-TYNE, England, is prepared to supply Gas Companies and others with every variety of appliance for the production and supply of Gas, including GASOMETERS, RETORTS (metal and clay), FIRE BRICKS, COALS, METAL MAINS, TUBES, in wrought iron, copper, brass, lead or composition, METERS, TAPS, FITTINGS, &c., &c.; and from his extensive experience in this class of work, can guarantee every thing of the best description.

JOHN ROGERSON & CO., NEW-CASTLE ON-TYNE, Middlesbro'-on-Tees, London, supply Gas Coal, Clay Retorts, Cast Iron Pipes and Retorts, Gasometers, &c. A partner of the above house being now in this city, will be glad to wait upon any gas company requiring supplies. Agents, MEAD & BELL,
17 William street, New York.

CLIFF'S ENGLISH CLAY RETORTS
Retort-Covers, Gas-Exhausters, Furnace Doors, Castings, Implements, Photometrical and Meter-Proving Apparatus.
T. W. PARMELE, Sole Agent,
No. 4 Irving Place, New-York.

IRON FOUNDRIES.

S. V. MERRICK, J. VAUGHAN MERRICK,
W. H. MERRICK.

SUTHWARK FOUNDRY,
Philadelphia.
MERRICK & SONS, Engineers, manufacturers of every description of Gas Machinery.
Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either TELESCOPIC OR SINGLE, WITH SUSPENSION FRAMES COMPLETE; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for proving Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Lime Sieves for Purifiers, Purifier Hoisting Machines, &c., &c.
Address— MERRICK & SONS,
5th and Washington Streets, Philadelphia.

BERGEN IRON WORKS,
Established 1833.
R. A. BRICK, Manufacturer of CAST-IRON WATER and GAS PIPES. RETORTS, PIPES, &c., always on hand. Office 109, Leonard street, New York

OREGON FOUNDRY, Nos. 740, 742, 744 Greenwich street, New York.
HERRING & FLOYD, proprietors, manufacture Gas Compensators of all sizes, Self-Acting Valves, Exhausters upon an improved plan, costing less than half those of English manufacture, also castings of every description for Gas and Water-Works.
Herring & Floyd offer for sale Sabbaton's Patent Screening Shovels for coke and coals, made of malleable iron, of all sizes; Sabbaton's Patent Improved Cast Iron Furnace Frame and Door, arranged to protect the iron work of the door and frame from direct contact with the fire; also Floyd's Patent Malleable Iron Retort Covers, only quarter of an inch thick, but of convex form, and of great strength, as is attested by certificates from several of the leading Gas-works in America. For engravings of all the above patents see AMERICAN GAS LIGHT JOURNAL for October, 1859, pages 65 and 71.
Samples of the above castings can be seen at the Rooms of the AMERICAN GAS-LIGHT JOURNAL.

COLWELL & CO., Manufacturers of Pig Iron and Cast Iron Gas and Water Pipes, No. 207 North Water street and 206 North Wharves, Philadelphia.
STEPHEN COLWELL, W. DWIGHT BELL,
THEO. TREWENDT, SAMUEL FULTON.

TRANER & MERCER, 117 North Water street, and 124 North wharves, Philadelphia, AGENTS FOR THE MERCER FOUNDRY, AND ELK STREET IRON WORKS
CAST IRON STREET MAINS; *Bends, Branches, Chemical Retorts, and all kinds of Castings for* GAS-WORKS, either COAL or ROSIN WORKS. SHEET IRON FOR GASOMETERS *cut and punched to order.* BOILER IRON *of all descriptions.* RUSSIA SHEET IRON, TIN PLATES, BLOCK TIN, COPPER, PIG LEAD, SPELTER, and Metals generally.

GAS-COAL.

CLEVELAND, O., NOV. 28, 1860.

THE PARTNERSHIP heretofore existing under the name of Butts & Kendall, has expired by its own limitation with the close of the business of the present season.
F. BUTTS & CO.,
will hereafter have the control of the mines of the STERLING COAL AND MINING COMPANY,
and with such increased facilities, both as to improvements perfected at the mines and transportation of coal, as will enable them to continue the business on a more extensive scale than heretofore in *supplying Gas-Light Companies* in the different States, both East and West.
We are now prepared to contract for the delivery of the
CELEBRATED STERLING COAL
for the coming season; also, Pittsburg and other varieties of GAS-COALS.
You will therefore please to address, in relation to such contracts, F. BUTTS & CO.,
Post-Office Drawer, 74, Cleveland, Ohio.

LIVERPOOL AND NEWCASTLE CANNEL & COAL,
FOR
Gas-Manufacturers and House Use.
The careful shipment of the best qualities, of Cannel and Coal, at the lowest rates current at the time of engagement guaranteed.
T. W. PARMELE, Agt.,
No. 4 Irving Place, New-York.

CANNEL AND ORREL GAS-Coal.—The Subscribers are constantly receiving direct, from the celebrated mines of WILLIAM H. BRANKER & CO., NEWCASTLE, ENG., COAL of the very first quality for gas purposes, which they will sell direct from ship or from yard at the lowest market price; and we guarantee the coal to be equal if not superior to any other coal brought to this market.
CORNELIUS BAKER & SON,
61 Leonard st. and 652 Hudson st., New York.

TO CONTRACTORS.

TO GAS COMPANIES AND CONtractors.—For Sale: Two sets Dry Lime Purifiers, 14 feet by 12 feet, 5 tiers of plates' 12 inch connections. A Station Meter, (square case) 8 feet front, 8 feet deep, and 7 feet high; registers 250,000 feet per diem.
Also a quantity of Bench Castings, consisting of Sections of Hydraulic main, (D shaped pattern,) Stand, Bridge and Dip Pipes, together with a number of Composition-faced Slide Valves, various sizes, from 6 inches to16 inches diameter.
Address the ENGINEER OF THE MANHATTAN GAS-LIGHT COMPANY, Foot of 18th-st., N. R., New-York.

IRON FOUNDRIES.

MORRIS, TASKER & CO.,
PASCAL IRON WORKS,
[ESTABLISHED 1821.]
PHILADELPHIA, manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap Welded Boiler Flues,
GALVANIZED WROUGHT IRON TUBES,
ARTESIAN WELL PIPES,
of Wrought or Cast Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal gas works; Cast Iron Street Mains, Bends, Branches, Drips, &c.
GAS AND STEAM FITTERS' TOOLS, &c.
STEPHEN MORRIS, CHAS. WHEELER,
THOMAS S. TASKER, STEPHEN P. M. TASKER.

CAST IRON WATER, GAS,
DRAIN, AND HEATER PIPES, &c.,
COLUMBIAN IRON WORKS,
OFFICE, No. 46 NORTH SEVENTH STREET,
Below Arch street, Philadelphia.
THOS. M. ADAMS, Proprietor.

TO GAS AND WATER COMPAnies:
The undersigned, Agent for Messrs. Thomas Edington & Sons, Phenix Foundry, Glasgow, Scotland, Is prepared to contract for all descriptions of Cast-iron Pipes of their manufacture.
About 6000 tons of these Pipes have lately been supplied to the Brooklyn Water-works, N. Y., and the Chief Engineer of the Works, A. P. Kirkwood, Esq., is ready to testify to their excellent quality.
ARCH'LD BAXTER, 28 Beaver st., N. Y.
Sole Agent For the United States and Canada.

R. D. WOOD & CO.,
MANUFACTURERS OF
CAST-IRON PIPE, RETORTS, &c.
Office, 400 Chestnut Street,
PHILADELPHIA.

CAST-IRON PIPES.—EARL'S IRON WORKS, NEWARK, N. J., 91, 93, 95, 97 and 99 Chestnut street. Branch Office, 21 Centre street, New York.
The subscriber continues to manufacture Superior Cast-Iron Gas and Water Pipes, Branches, Bends, Angles, Bevel Hubs, Reduces, Sleeves, Drip Syphons, Plugs, Caps, Retorts, Bench Castings, and Castings in general, Particular attention paid to all Castings connected with Gas Works. E. B. EARL.

S. S. ASHCRAFT, Cincinnati, O., Manufacturer of Gas and Water-Pipes, with Branches of every description; Retorts for Ga and Oil Works; Gasholder Stands, Columns, &c.; Gas Purifiers, Condensers, and Gas Apparatus of all kinds; Foundry Work in general.
N. B.—A complete selection of Patterns on hand. Refer to any of the Gas Works in the Western and Southwestern States.
THEODORE SCOWDEN, Engineer, Louisville.
JOHN JEFFREY, Civil Engineer, Cincinnati.
JACOB HOUGHTON, Engineer, Detroit.

GAS & WATER-PIPE.

PARIS'S PATENT
GLASS-ENAMELLED WROUGHT IRON TUBES.
PROSSER'S PATENT
LAP-WELDED IRON BOILER TUBES.
TUBES FOR ARTESIAN WELLS, CONVEYING STEAM OR WATER, SHAFTING, &C., SCREWED OR COUPLED TOGETHER, IN VARIOUS WAYS.
THOS. PROSSER & SON, 28 Platt-st. N. Y

CAST AND WROUGHT IRON Pipe, Branches, Elbows, Sleeves, &c. Lamp-posts, Wrought iron Lanterns for Lamp-posts, Gas Retorts (clay or iron), Street Mains in 9 or 12 feet lengths. Sheet iron cut to pattern for Gas-holders. For sale by the manufacturers' Agent,
HENRY G. NICHOLS, 24 Pine-st N. Y.

HUNTER, KELLER & CO., Manufacturers of
WROUGHT-IRON PIPES, AND FIXTURES
of all descriptions, for
STEAM, WATER AND GAS,
144 Centre street, New York.

GIRARD TUBE WORKS. Murphy & ALLISON, Proprietors. Wrought Iron Coke-Welded Tubes, for Gas, Water, Steam, &c. Wrought, Cast and Malleable Iron Fittings, Steam and Gas Cocks, Valves. Also, Galvanized Tubes and Fittings.
Office 1908 Market street, Philadelphia.

AMERICAN TUBE WORKS.— W. G. Smith & Co., Forty-sixth street, east of 10th Avenue, New York City. Manufacturers of WELDED IRON PIPE, for Steam or Gas, of all sizes, from 1-8th to 3 inches.

W. & J. GRIFFITHS & CO.— City Tube Works, Malleable Iron, and Brass Foundry, No. 27 North Seventh Street, Philadelphia. Manufacturers of Wrought Iron Pipe, Lap Welded Flues and Fittings: also. Brass Work of all descriptions, for gas, steam and water, Particular attention given to heating buildings, &c.

CARDS.

NATIONAL DIRECTORY
OF
Gas & Steam Fitters & Plumbers.

ALBANY, N. Y.
WILLIAM MUNSIG, **623 Broadway.**
ALEX. B. SHEPARD, **17 South Pearl St.**

BALTIMORE, MD.
BLAIR & CO., **366 W. Baltm'e St.**
GRATTAN & EVANS, **8 North St.**
J. H. McCALL & CO., **15 W. Fayette St.**
JOHN RICHARDS, **274 W. Baltm'e St.**

BOSTON, MASS.
J. KENNEDY, **45 Maverick Sq.**
W. WILTSHIRE, **46 Devonshire St.**
N. P. WOODMAN, **13 Haverhill St.**
J. B. WRIGHT, **28 Devonshire St.**

CINCINNATI, O.
BAKER & VON PUHL, **64 Fourth St.**

NEW YORK.
JAMES HELME **58 East 13th St.**
WM. TOWERS, **31 Carmine St.**
GEO. C. ELLISON, **859 Broadway.**
B. M. JOHNSON, **111 East 18th St.**
LOCKE & CRAIGIE, **13 East 20th St.**
McKENZIE & O'HARA, **326 Fourth St.**
ANTHONY KENDALL, **358 W. 36th St.**
DAVIS B. LANE, **167 William St.**
F. B LANGWITH, **62 White St**
FRANCIS MATTHEWS, **47 Ann Street.**
CHAS. F. MERRITT, **156 Seventh Ave.**
WM. PALMER, **408 Eighth Ave.**
GEORGE E. PARKER, **156 Seventh Ave.**
DAVID REA, **48 Cortlandt St.**

GAS-METER FLUID.

FLUID for GAS METERS.—The undersigned is prepared to furnish the Glycerine meter fluid in quantities to suit purchasers: *it does not evaporate, can be made to stand any degree of cold liable to occur in this country or in Canada, and does not corrode the metals of the meter. It has been in use successfully for the last three years.*
For particulars, references, &c., address the manufacturer. HENRY BOWER,
Box 363, Philadelphia, Pa.
For sale also by HORATIO EAGLE, sole Agent for the cities of New York, Brooklyn and Jersey city.

GENGEMBRE'S PATENT GAS-Meter Fluid. It is non-freezing and non-evaporating. Certificates from several companies that have used it may be found in the AMERICAN GAS-LIGHT JOURNAL for December 1st, 1860, page 163. For Sale only by
A. L. BOGART, 592 Broadway, New York.

PATENT RIGHTS.

INVENTORS' DEPOT & SALES Room for Patent Rights.—Parties desirous of placing with us valuable Patents, for the sale of Rights, on commission, will here find the Head-Quarters for Inventors and their Patents, as well as for parties seeking investments in articles of undoubted merit. The public are invited to call, or send for Circulars. New articles coming in daily. BUTLER, HOSFORD & CO.,
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